

THE STRUCTURAL, CULTURAL AND INSTITUTIONAL CONSTRAINTS
TO IMPROVED HEALTH AND NUTRITION
IN SOUTHWEST NIGERIA

BY

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THE STRUCTURAL, CULTURAL AND INSTITUTIONAL CONSTRAINTS
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By

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Hunger and malnutrition are pervasive problems in many parts of the developing world, particularly in sub-Saharan Africa where growth in agricultural production is failing to keep pace with population growth. This research examines the vital link between nutrition and health campaigns and improved dietary and health practices among African women, who produce and prepare the majority of foods consumed in African households.

With a rapidly growing population that already exceeds 100 million and an unstable economic and political system, Nigeria, Africa's most populous nation, is poised on the precipice of nutritional collapse, with 43% of the Nigerian population mildly to severely malnourished. Rising inflation, decreasing social services, and a limited traditional diet, heavy in starches but lacking in protein, all play critical roles in the nutritional problems of the country. One recommended solution among food research

institutions in Africa has been the incorporation of the soybean into the traditional diet. The soybean, a non-indigenous food, was first introduced to the country early in this century, but was traditionally used only as animal feed. Although extremely high in protein, reasonably affordable, and remarkably adaptable to the Nigerian diet, the soybean has only slowly gained acceptance in the Yoruba areas of southwest Nigeria. Using ethnographic field methods and decision-tree modeling, this research explored the motivations and constraints to the adoption of recommended health practices and food habits, in particular the adoption of the soybean, among Yoruba women of the Ogbomoso Zone. The final model, which accurately predicted 88% of 70 women's decisions to adopt or not adopt soya, showed that among the major constraints to soya adoption were the lack of knowledge and amount of time required for preparation of soya foods. Important motivations for adoption were found to be based on perceived health and economic benefits of soya as compared to other traditional staple foods. The case study of soya adoption was also used to explore larger cultural themes such as women's understanding of malnutrition and illness, their patterns of health-care seeking behavior, and the type and methods of operation of the health-care providers and institutions within the Ogbomoso Zone.

CHAPTER 1 INTRODUCTION

Victoria sat unmoving on a small wooden bench in a dirt-floored dark house with no door or glass windows. Her hands were folded neatly in her lap and her eyes were quiescent, though not unwatchful. It was as if she were waiting patiently for something, unseen to those around her, to happen. Her hair was now gone, having first turned orange, thinned, and then failed to hang on, as if it too were too hungry and tired to try anymore. Her hands, swollen and cracked, matched her uncovered feet. Her bloated face, covered in purple salve to ease the pain of splintering skin, was frozen in an impassive expression, making it difficult to imagine what her face would have looked like in happier, healthier times. At seven years old, she weighed just over 10 kilograms, what a healthy child would weigh at a year old. While starving to death, she could no longer eat although food was being given to her, even pushed on her, by angry family members unable to understand why it was no longer something she desired. All she had had for a week now were Coca Colas and tinned milk. Victoria was now waiting for death, urging it on in a quiet lack of resistance. In her eyes it was clear that death could not come too quickly although life itself had hardly begun. Victoria would die less than a month later (Nigerian fieldwork, 1996).

Victoria was just one of millions of children to die that year of malnutrition. In fact, hunger and malnutrition contribute to millions of deaths every year, the majority of which are children. Hunger instigates much of the violence and unrest in the world while malnutrition leads to and exacerbates diseases of all kinds. Millions suffer every day and some die every minute either directly or indirectly from hunger and malnutrition and yet the world is no closer to a solution than it was in the past decade, the past year or the past month. The problem is mounting as quickly as is the earth's population.

Since 1950 the world population, then 2.5 billion, has more than doubled to 5.7 billion. Estimates now predict that the world population could be as high as 12 billion by

the year 2050 (MacKenzie, 1994). Even more disturbing than this is the prediction that most of this growth will occur within the already-struggling developing countries. The percentage of people living in the developing world in the 1950s was about 66%, but by the year 2000 it is expected to be as high as 80% of the total population. In addition, statistics show a growing trend toward urbanization; this means a pulling away of people from farms, increasing the number of food consumers and reducing the number of food producers. Between 1950 and 1990, for example, the number of people living in cities doubled and by the year 2000 it is anticipated that over 3.2 billion people will be city-dwellers. Of these city-dwellers, a greater percentage will live in cities with populations of over 5 million. Although in 1950 there were only 6 cities with populations over 5 million, by 1990 that number had risen to 26 and could be as high as 60 by the year 2000. Seventy-five percent of these cities will most likely be found in the developing world (Dando and Dando, 1994).

This rapid rise in population in the developing world is accompanied by a leveling off of food production. Although worldwide food production grew rapidly between the 1950s and 1980s, and is still increasing each year, it is no longer keeping pace with the burgeoning population (Pearce, 1996). Total production, for instance, was rising 3% per year until 1984, but is now rising only 1% a year with population growth at 1.8% a year (MacKenzie, 1994, 27). The amount of grain produced per person each year reached its peak in 1983 when 346 kilograms per person were being produced. Estimates indicate that by 2030 grain production will be around 240 kilograms per person, close to the present Indian diet of 200 kilograms per person per year (Kleiner, 1994). As recently as 1996 cries went up to put the world on "hunger alert" as grain production dropped 5%

below its 1990 levels. The world's grain holdings dipped to 48 days' supply, 17 days shy of the United Nation's "safety threshold" (Pearce, 1996).

Worldwide Hunger and Malnutrition

Although every few years hunger warnings go up in response to fluctuating food production, the reality is that millions of people starve every year, even in surplus years. In 1990 it was estimated that 786 million people were chronically underfed (Young, 1996). Presently, it is approximated that 15 million children under the age of five die hunger-related deaths every year (Shields, 1995). That means that a child dies of hunger every three seconds (MacKenzie, 1996). These deaths are generally from ordinary and preventable malnutrition and disease (Trant, 1993).

In order to fully understand the worldwide hunger issues, the types of nutritional and hunger crises should first be clarified. The most dramatic type of nutritional crisis, which draws the most media attention and is therefore more in the forefront of world action, is acute hunger. Acute hunger is a physical and a psychological state. Those experiencing hunger not only experience biological effects, but also experience feelings of restlessness, sensations of emptiness, and unpleasant gnawings or hunger pangs (McIntosh, 1995). This type of hunger is often caused by famine and may result in death by starvation. Famine, although defined in many ways by many people, can be defined as a socioeconomic process which pushes the most vulnerable segments of society to the point in which they can no longer maintain a sustainable livelihood (Young, 1996). This is often due to proximate causes such as war, drought, flooding or crop failure and can be characterized by insufficient food availability, inadequate food intake, higher than normal mortality, and/or social disruption (McIntosh, 1995). The less dramatic but more

pervasive type of hunger is chronic hunger or malnutrition. Malnutrition, in general terms, may be defined as the nutritional disorder that results from an unbalanced diet. In developed countries this often takes the form of overnutrition (Milio, 1989). In developing countries, it is more commonly associated with an inadequate diet, one that is insufficient for meeting the protein, calorie, or other essential nutrient needs necessary for normal growth, body maintenance, and energy requirements for daily activities (Foster, 1992). The underlying causes of the failure to eat a proper diet can be multiple and range from the lack of available, affordable food to the unwillingness to consume the necessary foods because of cultural, social, religious, or personal reasons.

The difficulty in defining malnutrition arises in pinpointing exactly who should be considered malnourished. Nutritional status is based on a number of complicated and interconnected factors. An individual's minimum nutritional needs are based on a number of elements such as age, body size, sex, physical activity, and the presence or absence of disease. It is very difficult, therefore, to "prescribe" a particular diet or amount of minimal nutrient intake for any group of people. Every individual's requirements are unique. Even if the optimal requirements are not met, humans, especially children, have an amazing capacity to adapt. Children, for instance, can adjust by limiting their physical activity or may adjust biologically by simply not growing (Tomich, Kilby, and Johnston, 1995).

Despite the ambiguities, general daily caloric requirements have been set out of necessity by various organizations and used to determine who is chronically underfed (Jelliffe and Jelliffe, 1989). Although worldwide numbers are open to scrutiny because of the varying methods of analysis and data-collecting techniques used, the numbers of persons affected by undernutrition or malnutrition at any given time by far exceeds those

affected by famine (McIntosh, 1995). Young (1996) reports that presently there are about 15-35 million people at risk from famine, mostly in Africa, while up to 20 times that number are chronically underfed or malnourished.

Although the worldwide numbers remain high, with the absolute numbers of malnourished persons growing every year, some areas of the world have made progress in diminishing both the percentage and total numbers of chronically underfed persons over the last two decades (Hopkins, 1991). Uvin (1993) reports that from 1970 to 1990 the percentage of chronically underfed people in the world as a whole declined from 36% to 20% and in total numbers from 942 million to 786 million. This impressive decrease was due mainly to the major successes in China in stemming malnutrition despite population growth. China reduced the percentage of underfed persons from 46% to 16% of its total population. In terms of total numbers this was a reduction from 406 million people to 189 million people. North Africa, the Middle East, Middle and South America, and South and East Asia all also reduced the percentage of chronically underfed persons, although not total numbers, during this time period. Sub-Saharan Africa has been the loser in the battle against hunger and malnutrition over the last twenty years as the percentage of malnourished persons rose 2% and the total number of persons almost doubled to 175 million. Statistics such as these, as well as research from the continent, continually point to Africa as the potential future catastrophe in the fight against hunger.

Hunger and Malnutrition in Sub-Saharan Africa

Approximately 60% of the world's hungry live in Asia, 27% in Africa, 10% in Latin America, and 5% in the Near East. Hunger exists in the developed world as well. For example, roughly 10% of Americans are presently heavily dependent on food stamps.

However, hunger is growing at the fastest rate on the continent of Africa. For example, the prevalence of malnutrition, as defined by the World Bank in a 1995 study, is estimated to be as high as 47% in Ethiopia and 43% in Nigeria. In addition, the under-five mortality rate, often intimately connected to poor nutrition, is estimated to be 17.2% in sub-Saharan Africa. This mortality rate is alarmingly high compared not only to rates in the developed world, but also in the developing world. Latin America, for example, has an under five mortality rate of approximately 5.2 % (World Bank, 1995). It is predicted that in the next ten years the number of hungry or malnourished persons in sub-Saharan Africa could reach 200 million (Thomas, 1996).

The staggering number of nutrition and hunger-related deaths in Africa can be, and often are, attributed to a host of diverse, but interrelated factors as can be evidenced by the plethora of literature from various fields exploring this issue. Some point to decreased agricultural production, down by 12% since the 1960s despite exponential population growth, as the heart of the hunger problem in Africa (Thomas, 1996). Others adamantly hold that equity and distribution problems are at the root of the food crisis on the continent and in the world (Porter, 1993). However, much of the world's efforts at hunger alleviation and prevention have been directed toward macro-economic solutions, holding that getting the "prices right" will allow for greater agricultural production and more equitable distribution (Gladwin, 1991a). At the same time, researchers and policy-makers from a number of fields are concentrating their efforts on the social and cultural fabric of societies that sometimes make improved health and nutrition for the majority of the population impossible, even if food is available and attainable (Fieldhouse, 1995). These issues seem to be of particular importance in sub-Saharan Africa which is a mosaic of

greatly-varied ethnic, religious, and social groups. The trend toward "unsustainable lifestyles" in terms of increased meat, egg, and dairy consumption is also a major source of concern for many (Lawson, 1995).

While a diversity in outlooks on the subject of world hunger and malnutrition might be viewed as healthy and critical to the problem-solving process, many believe that the resources are too limited to efficiently and effectively pursue more than one avenue towards better health for all Africans. As Pearce (1996, 15) claims, "resources and energies are rationed." However, this research is based on the view that the problem in Africa, as in the rest of the world, is not unidimensional; therefore, neither will the solution be. Any missing link in the chain of food production, distribution, preparation and ingestion can impact the nutritional status of an individual. As Sen (1983, 11) stated, "Battles over food are persistently waged in widely different arenas." And despite the production or seeming availability of food, "uneaten food has no nutritional value" (Pellett, 1983, 115). Realms from the international to the household are neither too large or too small to influence the way in which one eats or is fed.

Hunger and Malnutrition in Nigeria

Nigeria, the most populous country in sub-Saharan Africa, despite its apparent oil and gas wealth, is by no means immune to the hunger and nutrition crisis of the continent. With 50% of its population below the age of fourteen and a population growth rate of approximately 2.9%, Nigeria may be among the most susceptible to food shortage and nutrition-related deaths in the coming years (World Bank, 1995). Furthermore, the highly volatile political and economic situation in Nigeria places the country at even greater risk for man-made famine. At present, the cost of food and other goods has risen dramatically

over the last ten years while the value of the naira, the national currency, has dropped rapidly (Lewis, 1996). In addition, due to structural adjustment within the country, fewer products are available to the average Nigerian, much less affordable. Most households have had to reduce their food consumption to the basic foods with little extra money for "luxury" foods such as meat, eggs or tinned milk. Any economic gains made by Nigeria from oil and gas exports have either been squandered, stolen, or invested in high-priced public goods projects which have proven too expensive to maintain (Ihonvbere, 1996; Lewis, 1996). Few benefits have trickled down to the population as a whole. In fact, many problems can be imputed to the oil and gas booms in Nigeria. Numerous environmental problems have surfaced, forcing many from their farmlands in the south. In addition, much energy, time and resources have been channeled away from other important economic sectors and into the oil and gas trade. The additional foreign currency gained during the oil boom years, for instance, encouraged a move away from attempts at agricultural self-sufficiency. From 1971 to 1981 there was a 495% increase in the import of wheat to Nigeria (Bradley and Carter, 1989).

Although it is difficult to accurately determine the number of malnourished persons in Nigeria, the World Bank (1995) report on African development indicators estimates that 54% of the children under the age of five are suffering from stunting, a condition in which a child is under-height for age. In addition, the report estimates that 36% are underweight for age and that 16% of the children under the age of two are suffering from wasting. The Nigerian Federal Office of Statistics reported similar findings in a 1991 report (Nigerian Demographic and Health Survey, 1991). Adults appear to be struggling as well to maintain adequate nutritional status. The average daily consumption of

kilocalories and protein was reportedly well below the recommended FAO minimum nutrient requirements even in the more prosperous decades of the 1970s and early 1980s (Atinmo, 1983). While these reports give a general idea of the extent of the ongoing nutritional crisis in Nigeria, recent and reliable statistics are difficult to obtain due to political unrest. Many of the data gathered by the government in census-taking have been highly disputed because political power is often dependent on census results (Morgan and Solarz, 1994). Many of the data have not been made available to the public at all. However, based on the available statistics, recent research and personal observation, it can be reasonably argued that millions of Nigerians are now suffering from mild to severe malnutrition.

The food and nutrition problems in Nigeria, as elsewhere in Africa and in the developing world, are pervasive and multi-dimensional. Olayide (1983) suggests that there are two distinct gaps in nutrition for the population of Nigeria. The first is the "caloric" dimension in which the foremost problems is the production and availability of foods that will provide the quantity and quality of energy required by children and adults. The second is the "nutrient" dimension in which there is an inadequate intake of the right types of fat, protein, minerals, and vitamins. Protein malnourishment has been a particular problem in children, especially those recently weaned. The reasons for this phenomenon are numerous, but part of the problem has been that high-protein foods such as meat or eggs have been reserved exclusively for adults due to their scarcity, price or status as "taboo" foods.

Nutrition and Food Selection Studies in Nigeria and the Developing World

The type and extent of malnutrition within Nigeria varies widely. Because Nigeria has over 250 different ethnic groups and languages, as well as a dramatic change in climatic zones from the ocean to the Sahara, it is impossible to make general statements about the nutritional and health problems of the population of the country as a whole. Each region presents its own unique situation in terms of climate, farming systems, ethnicity, food habits, and culture. Much overlap does exist from region to region in these variables because of the mobility of the population and the melding of the cultures; however, no study of the country would be accurate without taking into account the widely varied set of circumstances within the country's borders.

Particularly in the area of food habits and preferences, regional variation tends to be great. In Nigeria, certain staple foods such as yam and cassava are found in all areas of the country. Some non-indigenous foods, such as white bread, are widespread as well. However, food habits, tastes, and preparation techniques of foods vary greatly. Therefore, while a worldwide theoretical base for food and nutrition problems is being sought, regional food selection and nutrition studies must continue so that present problems can be effectively addressed.

Many researchers in the areas of medical geography, anthropology, and other fields strongly advocate studies which take into account "uniqueness of place" (Gesler, 1992; Kearns, 1991, 1993; Jones and Moon, 1993). In addition, qualitative and more particularly, ethnographic, research is being encouraged as it gives dimension, depth and validity to the multi-faceted health problems of the developing world (Pelto and Pelto,

1992; Scarpaci, 1993). Although empirical data are important and often necessary to the understanding of health and nutrition problems, they are often not enough to complete the full picture, especially on a local scale. Many social scientists and policy makers are calling for more efforts toward establishing theoretical underpinnings instead of just seeking data on which to base policy decisions (Kearns and Joseph, 1993). Jones and Moon (1993, 516) contend that even in regional studies location is often relegated to "a role as a mere container of measurable events." As these and others point out, regional studies are not only informative about local problems or the importance of uniqueness of place in health matters, but they can also add to a worldwide theoretical foundation concerning hunger and malnutrition issues, especially in the developing world.

Nigeria presents an excellent area in which to conduct regional food studies and add to our global understanding of countries in the developing world which are posed on the brink of serious hunger and nutrition problems. The Yoruba diet in southwest Nigeria is of particular interest because the traditional diet has evolved very little over the decades. Except for the addition of "luxury" processed foods such as bread and tinned milk, generations of Yoruba people report eating the same diet as adults as they did as children. Also, despite the "globalization" of diets, most Yorubas seem to have little enthusiasm for expanding their diet, sometimes even in the face of extreme crisis (Young, 1996). The nutritional issues, as viewed by the Yoruba, are perceived as problems of quantity as opposed to quality. Although some understanding exists concerning nutrition, many cling to traditional diets and practices, even those which have proved unsuccessful in the past, to cure nutrition-related health problems. However, especially in the present economically difficult times, the Yoruba people are being forced more often to seek alternative foods,

food preparations, and survival strategies (Elabor-Idemudia, 1991). Many of these changes are coming through women who are most often the primary caregivers for children, household food producers and acquirers, and the central decision-makers concerning food for the family (Olawoye, 1988). Research targeted at these primary decision-makers, focusing on how and why they make the decisions that they do, is critical to combat the growing problem of malnutrition in Nigeria, especially among children.

Specific Aim of the Study

The purpose of this study is to explore, describe and explain the motivations and constraints to change in food habits among the Yoruba women of Nigeria. In particular, the study focuses on the adoption of the soybean, a non-indigenous food that is highly nutritious and generally affordable. Using the decision-making process of Yoruba women in the use and preparation of the soybean as a basis for broader exploration of health and nutrition issues, this research seeks to answer the following questions concerning food, nutrition and health in Yorubaland:

(1) Do women in Yorubaland make food choices *motivated* primarily by economics, culture, health status, individual preferences, household pressures or social marketing by institutions?

(2) Are socially-marketed changes in food habits in Yorubaland *constrained* primarily by personal preference, cultural or institutional influences, structural circumstances or gender-related responsibilities and pressures?

(3) Do Yoruba mothers recognize malnutrition among their children? What do they perceive as the cause of malnutrition? Do they consider it to be a spiritual, health, or food-related problem? How do they respond to malnutrition and illness in their children?

Is malnutrition a primary motivating factor in the adoption of new food habits, specifically the adoption of the soybean, among Yoruba women?

As a general decline in the nutritional status of the population occurs due to a variety of economic and political hardships, women are beginning to change the way in which they make food decisions for their families, thus altering the food habits of all society. These changes most often first occur in marketing and farming decisions. In conjunction with this are shifts in the preparation techniques and the quality and quantity of foods offered the family.

The emergence of the soybean, known in Yorubaland as soya, provides an opportunity for the study of changing food patterns within Nigeria. Soya, a non-indigenous food, was first introduced to the country earlier in the century, but is enjoying a revival because of recent social-marketing campaigns within Nigeria encouraging its consumption. Although extremely high in protein, reasonably affordable, remarkably adaptable to the traditional diet, soya has only slowly gained acceptance in the Yoruba areas of Nigeria. Its adoption has been limited despite the heavy campaigning by many institutions including governmental and non-governmental health organizations, farming extension groups, social organizations, and research institutes such as the International Institute of Tropical Agriculture (IITA) based in Ibadan, Nigeria. This research uses the "real world" social-marketing campaign of soya to explore the food, nutrition and health decision-making processes of Yoruba women.

Contributions of the Study

Using an ethnographic research model and employing the tools of personal interviews, surveys, participant observation, and decision-tree modeling, this research

explores the basis for resistance to change in nutrition and health matters in Yorubaland and, to a lesser degree, the effects of the decisions once they are made. Decision-trees are used to provide quantitative and qualitative data concerning decision-making processes in food selection.

The motivations and results of decision-making concerning diet in the developing world are critical to our understanding and direction in hunger and nutrition issues. As mentioned previously, greater food production and more equitable food distribution are undoubtedly crucial to adequately feeding the world's growing population; however, people must actually eat what is available in order to gain the benefits. Both acceptability and availability aspects of food selection must be considered. If institutions and organizations continue to advocate the consumption of foods that are not acceptable to the general population, all the time, money, effort and research will be in vain.

There are practical and theoretical contributions anticipated as a consequence of this study. Pellett (1983) in his commentary on world malnutrition, stresses that while general numbers and statistics on world hunger and nutrition problems may be needed to shock the international community into action, they contribute very little to the alleviation of the problem. He encourages instead regional and country studies which pinpoint problems and can be of much more "general usefulness" (Pellett, 1983, 115). From a practical standpoint, it is believed that the findings of this study will contribute to the understanding of nutrition problems in southwest Nigeria. It should help direct existing health and agricultural institutions in and around the Ogbomoso area to better meet the needs of their clients. By determining the existing constraints to change and adoption of improved health and nutrition practices, administrators and workers should be able to

better tailor their programs to the true needs of the clients, not just the perceived or expected needs. This study seeks to increase the knowledge and understanding of the following factors that influence a woman's response to nutritional and health problems: (1) dietary decision-making, (2) health-care decision-making, (3) cultural taboos and belief systems, (4) economic and structural limitations, and (5) institutional limitations. From a theoretical standpoint, this research aims to contribute to the understanding of the variables that affect nutritional status, the cultural and institutional influences on diet and health decisions, and the individual and cumulative decision-making processes concerning diet and health.

In the second and third chapters, I provide a foundation for this research by reviewing pertinent literature as it relates to both accessibility and acceptability of foodstuffs in the developing world. Chapter 2 explores development and agriculture issues in the developing world as they relate to food and hunger issues. Chapter 3 examines the role of food preferences and habits in hunger and malnutrition. In addition, Chapter 3 reviews the present and suggested nutrition and health practices in the developing world, particularly in Africa.

Chapter 4 focuses more narrowly on the problems within Nigeria, particularly in Yorubaland, providing a foundation for the final analysis and description chapters. The initial segments of Chapter 4 summarize the history of and current situation in the country of Nigeria. The physical, cultural, economic and political spheres of the research environment are briefly examined. The latter section of Chapter 4 describes the methodology used in my fieldwork and analysis of data.

Chapters 5, 6, and 7 present, analyze, summarize and describe the data and their implications. Chapter 5 includes individual and composite decision-trees of the soya-use decision among Yoruba women and an exploration of the relevant themes. Qualitative data gathered in interviews and participant observation and quantitative data gathered through survey are used in support of conclusions drawn. Chapter 6 draws on the analysis of Chapter 5 to discuss larger cultural themes concerning health, nutrition and foodways in Yorubaland. Chapter 7 provides a brief summary of the research and explores possibilities for future studies related to this research.

CHAPTER 2 DEVELOPMENT AND AGRICULTURE IN A HUNGRY WORLD

In 1969, in the wake of the apparent successes of the Green Revolution, the FAO made the startling suggestion that the world might one day be faced with the problem of agricultural surplus rather than of shortage. Even into the early 1970s, it appeared as if the world might be assured of adequate, if not abundant, food supplies. However, the oil shocks and short-term crop failures, compounded by less obvious long-term problems, lead to a food crisis in 1972-1974 that once again shook the world's confidence concerning food security (Mayer, 1980). Since that time, apprehension over food production and distribution and the mounting numbers of hungry and malnourished in the world has continued to grow. While statistics do show a reduction in the proportion of malnourished in some areas of the developing world, the absolute numbers worldwide are increasing due to the burgeoning population (Uvin, 1993). Many of the developmental and agricultural successes are offset or at least diminished by the increasing numbers of additional persons the world must feed each year, leaving scientists, government leaders, and policy-makers wondering how we will continue to meet the human needs of the planet (Bradley and Carter, 1989; Brown, 1990).

Hunger and malnutrition, however, have undoubtedly always been part of the human landscape. Some of the earliest writings make reference to famine, starvation and food shortage (McIntosh, 1995). Likewise, concern and debate over how to eradicate

these problems are by no means new. As early as 1798 Thomas Malthus, an English clergyman, was pondering food shortage and population as he began to notice that the average size of families was increasing even as people struggled to feed themselves adequately. He predicted that if population growth did not slow that population would outstrip "the power in the earth to produce subsistence for man" (MacKenzie, 1994, 26).

Numerous avenues of research and action are being taken in an attempt to eliminate, or at least slow, the growing problem of malnutrition and hunger in the world by making food available to those in need. Many individuals and organizations are looking for answers in the economic realm, believing that economic stabilization is the key to eliminating poverty and then hunger. Others are seeking solutions through increasing agricultural production or by improving the distribution of agricultural production. The following chapter examines the developmental and agricultural issues concerning food security and health in the "hungry world" in which the continent of Africa appears to be at the center.

Development Issues in Sub-Saharan Africa

Development can be defined as a process that includes several components such as "increased economic growth, equity and distribution of the fruits of the growth, control by the population of its own destiny and achievement of qualitative transcendental values" (Taylor, 1992, 214). It is a goal to which countries aspire, but what are the concrete steps that a country must take to achieve development and when does one know that development has been reached? After World War I, when development economics first became an academic discipline, most economists believed that all countries would reach development along the same path, following the same stages as all those that went before

them. Today, however, most economists agree that developing countries will not have to duplicate the histories of industrialized countries such as the United States, Germany or Japan in order to grow economically. There is no universal path to development (Morris and Adelman, 1989). In fact, Westernization and modernization are no longer seen as necessary partners to development (Foster-Carter, 1976).

In recent years, in response to the failure of many countries to "develop," experts from numerous fields have questioned and explored the elements that determine development (Crocker, 1991; Goulet, 1992; Peet and Watts, 1993). Ingham (1993) makes several generalizations about the new meaning of development that has emerged from the recent interdisciplinary interest. Ingham stresses, first of all, that while the historical element of development is critical to our understanding, it is not imperative that developing countries of today follow the standard route of countries that developed in the 19th century. It is, in fact, almost impossible that they can develop in the same way given the new technology of present-day. Rostow's (1960) linear conception of history and development is no longer universally accepted (Ruttan, 1991). Many countries and their economies miss stages, become immobilized in one, or even regress, as could be the case in many sub-Saharan African countries. Studies show that similar policies and institutional structures in different countries will rarely produce similar results (Morris and Adelman, 1989; Kirkpatrick and Weiss, 1995). Also, it has been increasingly recognized that while structural change is still important, "modernization" should not be a goal in and of itself.

Many economists and others are seeking to find ways to develop without destroying the environment and the indigenous way of life and without punishing those who are most traditional and rural (Peet and Watts, 1993). Although growth will never be

completely equitable, some development specialists are attempting to minimize any obvious biases (Sahn, Dorosh, and Younger, 1996). For example, development policies are sometimes accused of not being "genderless" (Gladwin, 1991b; Logan, 1987). Women, children, and the rural poor are increasingly viewed as the sacrificial lambs in many development schemes (Helleiner, Cornia, and Jolly, 1991). As a result, policy-makers are being urged to be "people-centered" rather than "goods-centered" (Ingham, 1993). The ethical choices and consequences of development are now acknowledged as critical components of development planning which cannot be ignored.

So important is this notion of development, that the world, for academic and political purposes, is no longer divided between the First and Third Worlds, but between the developed and developing. Of all the developing regions of the world, sub-Saharan Africa (referred to as Africa from this point forward) is arguably the poorest, least developed and most vulnerable to internal food insecurity and external economic shocks (Jones and Kiguel, 1994). Despite all of the hopes of the years following independence, Africa has failed to meet many of the economic and social challenges that it has faced (Kirkpatrick and Weiss, 1995). Economic growth, particularly in the agricultural sector, did look promising during the 1960s and 1970s; however, food production has failed to keep up with the rapidly growing population. Food production has declined by almost 20% since the 1960s in most African countries (Macgregor, 1990). Most African countries today are suffering from high population rates, declining per capita food production, land degradation, worsening terms of trade, declining export revenues, and enormous debt. Most sub-Saharan African countries entered the 1980s with severe macroeconomic problems such as overvalued exchange rates, high budget deficits, and

high inflation rates. Growth rates in all sectors are dropping, inflation rates are rising, debt repayments are up to a quarter or more of export earnings, share in world trade has dropped, and productivity of labor has declined. Between 1980 and 1986, for example, economic output and exports declined by 30% and between 1980 and 1987 private net transfers were reduced from a positive inflow of \$2.5 billion to a net outflow of \$7 billion (Watts, 1994, 373). In the social arena, spending on health per capita has been reduced by 50% and on education by 25% and illiteracy rates continue to be high (UNICEF, 1993; Taylor, 1992). In addition, the number of people living in poverty grew in the past decade, the quality of education declined, and the quality of life measurements showed little, if any, improvement in most countries (Macgregor, 1990). By both social and economic standards, development has eluded sub-Saharan Africa (Helleiner, 1992).

Development and Pre-Colonialism in Africa

Africa seems in many ways not to have had a history before the 1600s and the European invasion of the continent. In reality, although Africa has no early written history, there is a rich pre-colonial history which is chronicled through art and oral narratives. Much of the written history of Africa was recorded by European settlers and explorers. Hopkins (1986) believes that this historical bias has created two polar myths concerning conditions in pre-colonial Africa: one emphasizes the wealth of the continent, extolling it as a land "flowing with milk and honey and peopled by noble savages," while the other paints Africa as a land of immense poverty caused by the idleness and ineptitude of the indigenous peoples. Most scholars do not adhere to either extreme in their historical recreation of pre-colonial Africa, but there are still undoubtedly many unknowns and misconceptions about the continent before the Europeans arrived.

What is commonly accepted now is that Africa did have a good deal of social organization, with many powerful indigenous leaders, inter-regional trade and some technological sophistication well-suited to the available resources and perceived needs. Fabayo (1996) points out that some of the earliest man-made tools have been found in Africa and are evidence to the existence of irrigation, cultivation, food storage systems, and mineral extraction systems. This and other evidence tends to contradict the theory that Africa is predisposed to underdevelopment, technical immaturity or resistance to innovation.

Development and Colonialism in Africa

Much has been written and theorized about the impact of colonial rule in Africa (Hopkins, 1986; Brautigam, 1994). Many scholars point to colonial rule as a source of Africa's economic and political misdirection since independence. Colonial rulers undoubtedly brought unfamiliar systems of production and governance to Africa, along with deadly diseases and some uncharitable motivations. Colonialism disrupted many indigenous technologies such as cloth-making, iron-smelting, and black-smithing, which were based on local resources. Much of the natural wealth was exploited and used by colonizers and their home countries. Some education was provided for the indigenous populations, but in general, social programs were limited to the colonial populations. There may have even been deliberate policies to prevent scientific and technical education (Fabayo, 1996). In addition to these acts of omission, the outside world negatively impacted Africa through slavery. The devastation for those enslaved is obvious; however, the effect on the remaining society was also great. Areas heavily influenced by the slave trade, such as Nigeria, were left with reduced populations, making production

and cultivation difficult (Hopkins, 1986). This experience has been contrasted with now-thriving regions in Asia where colonizing countries, such as Japan, produced a strong agricultural sector, extensive infrastructure, and a base of literacy (Brautigam, 1994).

What have the long term effects of international influence and colonialism been on the African culture? Many scholars claim that these influences actually changed very few of the basic culture and traditions in Africa (Morgan, 1992). This may be due in part to the system of indirect rule commonly employed by the British, for instance. Instead of destroying local systems of governance, some colonial rulers simply worked within the system to gain advantage. In many cases colonizers did not have the power, presence, or desire to "rule" the African people, only a need to exploit the abundance of natural resources. Therefore, many traditional systems and cultural norms were kept in place. Hyden (1980) holds that the "economy of affection," in which patron-client relationships guide much of the political and economic systems, is still alive and fully functioning beneath a veneer of capitalism and Westernization. These traditional relationships have had a powerful effect on African leaders in the post-independence years and may provide a better explanation for economic and political stagnation than does colonial rule (Herbst, 1990). While capitalism has modified social systems in Africa, it has not ultimately changed them (Hyden, 1980).

Development in the Post-Independence Years in Africa

Whatever the long-term effects of Africa's pre-colonial and colonial history, the post-independence years have been vital in determining the direction of development within the continent. Independence in the countries of Africa was met with great hopes and good intentions by the new African leadership. As Bates (1981, 96) stated, "It was

called a new dawn, a rebirth, a reawakening." The goal of the new governments was to encourage development and foster economic growth in their infant countries. Most sought to accomplish this "modernization" through industrialization supported primarily by agriculture. Based on the accepted doctrine of the times, the African leaders, many of whom were students of the leading development economists, believed industry to be "the engine of growth" (Bates, 1981, 97). Savings would come from industry, not agriculture. Most leaders were advised to move toward state-led import substitution industrialization, especially in manufacturing (O'Brien, 1991). In order to achieve this goal, many leaders channeled resources from the rural farming sector into the industrial sector while maintaining that there should not be an accompanying decline in agricultural production. The goal of growth has not been attained. Agriculture in sub-Saharan Africa has suffered greatly while industry has not flourished as hoped. Despite these poor results, many countries are still following a similar, although perhaps less dogmatic, approach to development even today.

Development and the African States

As discussed above, at least a portion of the blame for failure to develop can be attributed to the African leadership and the prevailing doctrine under which they have operated. Some claim that many leaders have simply manipulated the system to promote programs based on unsound doctrines and designed to further their own self-interest (Ayittey, 1995). Others, however, see the leadership as simply misguided by international advisors, who even among themselves cannot reach a consensus on how best to attack the economic problems of the continent. Whatever the motivations of the leadership, poor domestic policy, often based on contradictory advice from a host of international advisors,

has led to the disequilibrium that has prevented sustainable growth (Berthelemy and Lecaillon, 1995). Many of these policies have even been designed and required of countries in order to obtain loans from the International Monetary Fund and World Bank. Some claim that the African leadership is actually taking too much of the blame for poor policies and bad economic choices made mainly by outsiders whose philosophies are constantly changing (Schatz, 1994). In the 1960s in the glow of independence, donors and international groups such as the World Bank pushed "development planning." In the 1970s it was "basic needs" and in the recession and debt crisis of the 1980s it was "structural adjustment" with attention given to short-term management (Peet and Watts, 1993). Now, in the wake of numerous failures, the philosophy has turned to "good governance" by the national leadership even though many reform packages come with a host of contingency policies designed entirely without input from the African leadership (Sachs, 1996, 19; Brautigam, 1994). In addition, emphasis is usually placed on the decision-making process itself with very little, if any, strategic planning on how to actually implement policy (Thomas and Grindle, 1990).

In this reality lies another of the basic problems with the national governments in Africa. Many are not claiming "ownership" of the economic and social programs within their countries (World Bank, 1994b; Helleiner, 1992; Sachs, 1996). Fine (1995) believes that concern with economic stabilization and structural adjustment from the international community has overshadowed the root of the problems within the host governments. Reforms cannot work, Fine claims, until the individual governments find the credibility, commitment and integrity to manage their economies wisely. Most important is the integrity of the national institutions, beginning with the government itself. Studies show

that African governments that have pursued reform with consistency and dedication have reaped the most benefits (Camdessus, 1991; Husain, 1994). Those programs that have fallen short of the stated goals have often done so because large sums of money were given to governments whose main concern has been saving regimes, not economies (Aiyittey, 1995).

Why would one doubt the credibility, commitment and integrity of the African leadership? Is economic development not desirable on both a political and personal level for the leaders of the African countries? Many experts agree that the situation is not as straight-forward as it might appear to be. The gains of development are at best long-term with many negative effects to contend with in the interval. In addition, if and when stabilization is achieved, the gains are not large. The most that many of the countries can hope for is a restoration of living standards to those enjoyed before the 1980s (Schatz, 1994; Fine, 1995). However, the political casualties can be high in an environment of need and poverty. Governments may even constrain their scope of action to maintain their credibility. Radical action, even when desperately needed, is often viewed negatively in the eyes of the population, especially in a suffering population. Retention of power is generally the strongest motivating factor in decision-making for politicians and commitment to reform is not always conducive to this end. Many African leaders are working in an environment in which votes do not matter; therefore, the patron-client relationship is frequently the most important arena in which politicians operate in order to retain power (Herbst, 1990; Fine, 1995).

Development, Peace, and Political Stability within Africa

Political stability is an increasingly rare, but much-needed, element in African countries. Two main issues come into play in most African countries: democratization and civil strife. While the World Bank argues that there is a causal relationship between democracy and sustained economic growth and African countries with a multi-party system tend to show good economic performance, empirical evidence does not indicate that democracy is a necessary condition of development. In fact, contrary to Rostow's argument that democracy is a necessary stage in development, others argue that some limitation of democracy may at some point be good for development because a strong state is sometimes needed more acutely than public voice (Ruttan, 1991). Also, culture affects the impact that democracy will have on a country. In some countries more value is placed on collective happiness than on individual liberty. Therefore, while democracy may be consistent with development, in planned economies the degree of political freedom does not seem to affect growth (Ingham, 1993). Based on empirical evidence, Vorhies and Glahe (1988) state that "where economic liberty does not exist, political liberty does not matter. Where economic liberty exists, political liberty matters." Nevertheless, it should be pointed out that once a certain level of development has been reached, it is very difficult to subdue the demand for democracy for its own sake (Ingham, 1993). Many believe that development without freedoms is not really development and that an integral part of development is people being able to enjoy the fruits of their own labor (Sen, 1989; Bauer, 1981).

Civil strife in the African countries has long been a deterrent to both economic and social well-being. The post-independence years are replete with examples of African

countries rocked by civil war. Over the past three decades Africa has witnessed an average of two or more coups a year and the assassination of dozens of presidents and prime ministers (Thomas, 1996). Rwanda is a recent example of political chaos and Nigeria experienced civil war in the late 1960s and is still suffering from ethnic tensions. Ethiopia, Uganda, Chad, and Angola are just a few of the others which have had serious internal strife (Azam, 1995). These wars have had enormous impact in terms of loss of life and physical capital, but they have also affected the total factor productivity growth rate as well (Nehru and Dareshwar, 1994). The "absorptive capacity" of African governments for increased external aid and advice is affected as well by civil strife (Helleiner, 1992, 781).

There are many root causes of civil war within Africa. Among the major areas of contention within many African countries are religious, ethnic, and tribal differences. Competition for natural resources is another arena of civil strife. For example, Rwanda has experienced internal problems over competition for land while Nigeria is still battling internally over oil and gas issues. While some of these wars can be better managed or at least positively impacted by national government action, others, especially those based in religious or tribal differences, may be more difficult to control by outside intervention. However, many governments have pursued deliberate policies to decrease internal conflicts. Repression is one form of peace-keeping, but can add an extra burden to government budgets in terms of military expenditures (UNDP, 1990). Redistribution of wealth, on the other hand, is less violent, less expensive and usually more successful. Cote d'Ivoire and Kenya are examples of countries which, although greatly divided ethnically, have generally maintained internal peace through redistribution policies. Many believe

that research and policy implementation geared toward reduction of civil strife is one of the most important development avenues to be explored in Africa (Azam, 1995).

Development and External Shocks in Africa

As mentioned previously, the lack of development in Africa is a much-debated topic in both political and academic arenas. However, there is general agreement that external shocks, over which the African governments have little or no control, have undoubtedly been a factor in Africa's failure to develop. The oil shocks of 1973 and 1979-1980 are attributed much of the blame for economic problems in the 1970s and 1980s. Declining terms-of-trade, rising world interest rates, changes in external financing, and worldwide recession have also severely jolted the economies of Africa. In fact, the official view from the Organization of African Unity (OAU) is that these external factors are the primary causes of the economic crisis in Africa (Thorbecke and Kone, 1995). They have led to a fall in savings, an increase in absolute poverty levels, growing inflation, increasing debt, and unusually high budget deficits. In addition, there have been cutbacks in imports and a decline in investment in infrastructure, which have in turn lead to accelerated economic problems (Thorbecke, 1995).

Krugmann (1995) asserts that in general there have been profound changes in the global political and economic order in the past decade that are forming an international system in which there is no place for the developing world's countries. The globalization of the world economy and the international technological revolution are encouraging greater competition and a push for increased productivity. As a result, corporate economic power is being consolidated into the hands of a smaller, more elite group than

ever before. These changes are intensifying the problems of "keeping up" in the economies of Africa.

Development and Natural Disaster in Africa

Because Africa is now balanced precariously on the economic precipice, natural disasters have had a devastating effect in the most recent decades. Africa has long faced many natural challenges as the continent is subject to limited and erratic rainfall patterns in many areas. Drought and desertification have long plagued Africa, especially in the regions in and around the Sahara desert. In the past three decades the continent has been more negatively affected by drought than any other region in the world (Morgan and Solarz, 1994). Desertification has been increasing over the past two decades due to unfavorable climatic events, increased animal and human pressure, and poor economic and political conditions that halt environmental efforts and displace populations (Pellett, 1991).

In recent years growing population and increasing poverty due to economic crises have put additional pressure on the environment (Mackenzie, 1992). Many marginal lands are being put under cultivation without the needed protective measures. Land already under cultivation is being overcultivated, overgrazed, and poorly managed in part because of population pressures. Much of Africa is being eroded from agriculture, causing nutrient loss that will not and cannot be replaced by fertilizer use (Cherfas, 1990). Deforestation is occurring because of the need for additional farm land and because of the increased need for fuel and construction materials. Many believe that Africa is close to its "carrying capacity" and that further agricultural intensification possibilities are severely limited (Brown, 1994). Pellett (1991, 188) claims that poverty, population and environment are deeply interconnected and have "causal linkages in both directions." Harris (1995) asserts

that Africa would have to triple over the next thirty years for the continent's food needs to be met and yet while agricultural intensification is possible on optimal lands, the efforts to overcome environmental shortcomings on poorer lands may not be feasible in terms of capital or labor inputs (Brookfield, 1984). In fact, intensification has been shown to be inversely related to rainfall in areas of Africa (Pingali, Bigot, and Binswanger, 1987).

Nevertheless, in terms of development, environmental issues need to be approached with caution as their importance can be easily overstated or understated. Moss (1992) urges development specialists to "escape" from categories and simplistic concepts of traditional land evaluation. One problem, Moss contends, is that environmental factors are often not considered from varying scales. The smaller the area in question, the more critical are factors such as management, crop varieties, and farming systems. General, macro-level assumptions can be misleading in development studies. For example, parts of Africa have sustained high population densities on land that is quite susceptible to degradation (Kates, Hyden, and Turner, 1993). Long-term studies in the desert-margin regions of Kenya and Nigeria indicate that even though the populations of both areas are growing rapidly, agricultural intensification has taken place. The environment in these regions appears to be better protected than it was before the population increase (Pearce, 1994b and 1994c). These cases support the theory that while arable land may be limited in places, additional labor and technological inputs may counter some of these limitations (Boserup, 1965; Borlaug and Dowsell, 1994). In areas where degradation has taken place, compensation through innovation rather than actual alleviation of the environmental problems may have to make up for the reduced food production.

Development, Africa, and the International Community

Whatever the myriad of reasons underlying the lack of development in Africa, the international community has come to realize that it is not a containable crisis. The plight of Africa will continue to increasingly affect the entire world. Future food insecurity alone is reason for great concern as in the 1980s Africa became a net grain importer for the first time. Disease, poverty and hunger are on the rise with no immediate solutions on the horizon. Countries in Africa, like many countries in Asia, can become a boon to the industrialized world's economies or can become liabilities. For centuries it has been a land of plenty in terms of primary products and natural resources for the developed world, but this alone can no longer support the economies of the African continent.

The Asian experience illustrates what can happen in countries, despite any negative "preconditions," when there are active "mentoring" countries involved in development (Brautigam, 1994, 137). Although external aid continues to flow to Africa, reports show that in the late 1980s there was an overall net transfer of resources away from developing countries (Sallnow, 1990). Many stress the need for more aid from external official sources based on need more than on political posturing (Sallnow, 1990; Helleiner, 1992).

In the 1980s, the IMF and World Bank did begin to respond to the collapsing economies of Africa. Most of the African countries entered the 1980s with extreme macro-economic problems which translated into lower GDP per capita and a decline in social well-being. In response to this trend the IMF and World Bank stepped in to help manage the economic problems. Most African countries negotiated stabilization programs with the IMF and structural adjustment programs with the World Bank. During the period between 1980 and 1988, sub-Saharan Africa accounted for 25% of all the World Bank's

structural adjustment programs (Kirkpatrick and Weiss, 1995). These programs had dual aims: stabilization and structural adjustment. Stabilization refers to the restoration of macro-economic stability through short-term policies aimed at reducing the current account and fiscal deficits and rate of inflation. Structural adjustment, on the other hand, has primarily the meso- and macro-economic goals of changing the relative prices and encourage institutional reforms which would improve resource allocation, economic efficiency and growth potential over the long-run. In addition, structural adjustment should protect the African economies from future internal and external shocks (Thorbecke and Kone, 1995). In reality, both of these goals, stabilization and structural adjustment, should affect supply and demand over time.

Although the goals and the eventual outcomes of economic stabilization and adjustment may be clear, the processes and plans for achieving these goals are much less so. Great debate in the international community and among development specialists and organizations exists as to how to achieve economic stability and adjustment for Africa (Ayittey, 1995; Berg, 1995; Krugmann, 1995; Maclean, 1997). The debate is fundamentally divided along two lines: the orthodox view and the heterodox view.

Generally speaking, the orthodox view, supported by the IMF and World Bank, envisions macro-level economic adjustments and stabilization as a way of halting the downward trend and encouraging growth. Investment plays a central role in the advancement of economic development (Simpson, 1994). Working within this philosophy, the IMF and World Bank have loaned floundering countries money on the condition that they implement the prescribed policy changes. Policies are recommended which attempt to reduce or sustain domestic demand by adding tariffs, regulating wages,

reducing imports and limiting real-income growth. In addition, they often implement switching policies which work to shift productive resources from the non-tradable to the tradable sector (Krugmann, 1995). The objective is to expand exports and import-substitutes while restricting imports. Although some of the orthodox policies are aimed at short-term stabilization, many of the policies are long-term and directed toward creating a more market-oriented economy. Much of the reforms, in terms of frequency, are aimed at agriculture with a main priority being the reduction of taxes on agriculture. While few in the orthodox camp will claim that these reforms are painless, they do hold that they are necessary and will pay off with long-term benefits. When confronted with the continuing downward economic trends in many African countries, the argument from the orthodox camp will most likely be that lack of performance is due mainly to incomplete implementation (Thorbecke and Kone, 1995). Assessment of orthodox reforms can be difficult due to problems of the choice of time period, country classification and weighting (Berg, 1995).

The heterodox view, held by UNICEF among other organizations, criticizes the orthodox view claiming that the recommended structural adjustment programs (SAPs) focus *only* on short-term stabilization and do not address the deeply rooted structural weaknesses in the African economies. These existing weaknesses, they contend, are the root of the economic stagnation and instability. In order to instigate real change, these programs must be undertaken as a slower transition and must be accompanied by true structural and institutional transformation (North, 1989; Helleiner, 1992). The heterodox camp believes that stabilization is critical to success, but not the only element needed. They agree that increasing producer prices is necessary, but maintain that many other non-

price constraints must be addressed as well. For example, the heterodox view asserts that while much of the policy needs to be directed toward agriculture, it must encourage investment by the government in programs that provide seed or credit, for example. Emphasis must be removed from the traditional export crops and refocused more on subsistence crops. They claim that a narrow-minded agricultural policy which focuses almost exclusively on cash crops will have, and has had, a devastating effect on the nutritional status of the bulk of the population which depends on traditional crops. In addition, the focus on a few export crops instead of a wide range of agricultural products harms export diversification, contributing to the decline of world prices of agricultural products and making the countries even more vulnerable to economic shocks.

The orthodox and heterodox views converge in places. However, the basis of their differences highlights the root of the present development debate: How can economic development with "a human face" be achieved? The major criticism of development policy today seems to be that economic measures are taken without careful consideration of the cultural environment of each country or the resultant social or human consequences (Logan, 1987; Taylor, 1992). Furthermore, the negative outcomes generally affect the most vulnerable persons in society: the impoverished, the agrarian, women and children. Decrease in spending by the governments on social measures such as education and health care is one of the major concerns of the critics of the present development plans. For example, UNICEF statistics show that in the 37 poorest nations, spending per person on health has been reduced by 50% and on education by 25% (UNICEF, 1988). Several theories have evolved from the criticism of development trends which might help soften the impact on the poor and vulnerable in adjusting countries.

Development with a "Human Face" in Africa

In recent years much of the development literature has begun to focus on the human aspects of "progress" in the developing world. In the beginning of development efforts, emphasis was placed primarily on economic issues with an implicit or explicit understanding that stable, growing economies made for healthy and happy populations. In these early years of development, orthodox theory basically expressed the idea that modernization and "Westernization" were primary goals and that there would be no "losers" in the process. Much contemporary thought, however, disputes these foundations for development with the claim that because there are irreconcilable differences between the developed and the developing world, there are naturally winners and losers. In addition, most no longer believe that what is modern or Western is always good, just as what is traditional is not always good (Foster-Carter, 1976). The response to the failure of development to further social as well as economic well-being was first of all the ushering in of a "socioeconomic" phase in development which replaced the purely economic. In even more recent times, emphasis has been placed on the purely human aspects of development (Hopkins, 1991). Many have urged a move toward development ethics, defined as "the normative or ethical assessment of the ends and means of Third World and global development" (Crocker, 1991, 457; Goulet, 1992). Development theories and policies are no longer viewed as value-free, but "value-laden" and replete with difficult choices and moral issues that can affect millions of lives (Crocker, 1991). Reports such as Adjustment with a Human Face (Cornia, Jolly, and Steward, 1987) and the Human Development Report (UNDP, 1990) have strengthened the move toward people-conscience policies. Development specialists, policy-makers, and academicians in

the developing world have also been involved in this paradigmatic shift. Asian specialists met in the early 1980s to discuss ethical matters of development and produced a book based on the seminars and research that resulted from the meetings. Philosophers and social theorists in Latin America have concentrated on ways in which to humanize development studies (Crocker, 1991).

While increased attention to the human impact of development policies can only be beneficial, critics have complained that principle in development is often far removed from practice (van der Hoeven, 1991). Although few would claim that full consideration of both the ends and the means in development is easy to achieve, many have nevertheless tried. In an effort to put action to theory, there have attempts to stimulate serious "moral" or "ethical" dialogue in development circles and to quantify and analyze the outcomes of development policies (Sen, 1984; UNDP, 1990; Crocker, 1991; Goulet, 1992). As Jones and Kiguel (1994, 2) stated, "Development requires much more than just good policies. It also requires sustained investment in human capital and infrastructure, strong institutions, and good governance."

Development, Flexible Economies, and "Enabling Environments" in Africa

Much attention has been given to creating or reviving strong, growing economies in Africa; however, new emphasis has recently been given to the importance of "flexible" economies. In a situation such as that in Africa, where the economy is poorly diversified and based almost entirely on primary products, international market changes and shocks can be devastating. So while an economy may grow or be strong in certain areas, it may also be inflexible and subject to collapse. Killick (1995a) and others are now stressing that economies must be flexible. For example, a World Bank (1984) report stressed the need

for adaptability and rapid responsiveness in economic institutions. Killick (1995a, 17) defines a flexible economy as "one in which individuals, organizations, and institutions efficiently adjust their goals and resources to changing constraints and opportunities." Flexible economies must be ready to respond or adjust to changes in a timely, but cost-efficient, manner. In addition, they should not only respond to changes, but should be innovative, seizing economic opportunities. Flexibility is essentially "disequilibrium behavior" in which both producers and consumers are prepared to innovate and respond to changes in prices, technology, and demand (Killick, 1995a).

However, studies have shown that even if individuals are prepared to respond to economic changes, there must be opportunity for them to do so. Flexibility in Africa a "paradox" because the people appear to respond to economic shifts and constraints as is evidenced in the strong parallel markets in many countries (Killick, 1995b, 155). Nevertheless, a healthy, timely response is difficult without the appropriate information, technology, and infrastructure. A flexible economy would afford an "enabling environment" in which the government and other institutions would construct an environment conducive to economic growth instead of trying to control the economy. Governments and international organizations can help create flexible economies or enabling environments in Africa by investing in training, research and development, and infrastructure which allow markets to operate effectively.

Development from Within in Africa

Another line of thought and research in development has been that of development from the "bottom-up" or "from within." This is by no means a recent movement, but one that is regaining support. The criticism of present development theory is that the policies

being implemented are all "top-down" (Taylor, 1992). "They start with economics, not people" (Chambers, 1989, 222). Many now believe that any macro-level policy, despite the theory or ideology, is limited within Africa because development must be designed, motivated and controlled at the local level in order to work (Goulet, 1989). There has to be an emphasis on diversity and specificity. This is increasingly important in many African countries where there is an endless continuum of ethnic, tribal, religious, and cultural differences as well as a loss of faith in national governments. In addition, many contend that there is a host of underutilized resources, both physical and human, on the local level (Taylor, 1992; Dei, 1992). Only the local populations understand how to best use and manage, in a sustainable manner, the resources particular to their own region. Planning without local input or direction can often be disastrous, especially in Africa where there exists such an intricate maze of ethnic groups and cultures (Monbiot, 1994; Hyden, 1986). Central planning, in all societies, has its weaknesses and these weaknesses seem only to be compounded in the rich diversity of Africa.

The key factors to development from within are participation and territoriality. Participation is important not just as an end, but also as a means for accomplishing specific goals. Furthermore, the origin of participation is also critical (Goulet, 1992). Action should be generated from the local level in order to create the needed enthusiasm. Local action, even if initiated by governmental or non-governmental organizations, has been shown to be more long-lasting and primarily development-oriented, as opposed to short-term and survivalist. If an outside organization is involved, it is best when resources and advice are garnered from the organization, but control is maintained by the local community. Not only does the local population understand their own needs, but also they

also innately consider issues of "territoriality." Much more than an understanding of spatial relationships, this is a comprehension of all the aspects that give uniqueness to a place. This can include economic elements, but also incorporates the cultural, social, and physical factors of the landscape. Sense of place is of supreme importance and should not be underestimated in any realm of development (Taylor, 1992; Jones and Moon, 1993; Kearns and Joseph, 1993).

Development and Agriculture in Africa

While many in world are focusing their attention on the economic woes of the Africa, others are dealing with the agricultural crisis that has been brewing and growing over the past three decades. Even if economic stability and structural adjustment are achieved in Africa, there will still be the problem of feeding the growing population. Again, there is a debate on how best to feed the continent's population. Some are striving for greater agricultural production while others are concentrating their efforts on efficiency in food distribution. Others still are working on changing diets to make better use of the food that is available or are working to reduce population, claiming that all efforts will be in vain unless the world's population is brought under control. Efforts to increase food production, some believe, are a simply a "holding operation" until population growth comes under control (Borlaug and Dowswell, 1994, 13).

The debate over food security and the world's carrying capacity is actually a debate over how to rid the world of hunger and malnutrition, although these issues are sometimes lost in the clamor. But the question remains: Is the alleviation of hunger in the world possible? If world hunger is indeed a complex economic, biologic, and cultural problem, why can many avenues of relief not be pursued? The scientific and political communities

are looking for a single-minded, direct approach for two main reasons. The first is that the theoretical basis underlying many of these approaches are fundamentally different, even diametric. The second reason is that the even if theoretical and practical approaches could be agreed upon in the international community, "resources and energies are rationed" (Pierce, 1996, 15). Money, time, energy, research and effort must be geared toward the most effective and efficient solutions to world hunger and malnutrition.

World Food Production

The argument that only limited avenues of action can be taken in reducing hunger and malnutrition makes more sense when viewed in the light of the immensity of the world food production challenge. Keeping pace with the world's population will be no small task. While the decades between the 1950s and 1980s were decades in which overall world food production outstripped population increases, due mainly to scientific advances and innovation diffusion, the past decade has seen a slowing in increases (Borlaug and Dowswell, 1994). The two methods of increasing production yields, intensification and extensification, are both experiencing limiting constraints.

The Green Revolution of the 1960s, believed by some to be the beginning of the end of world food problems, has seemingly "run out of steam" (MacKenzie, 1994, 27). The benefit of increased inputs, such as fertilizer, is leveling off in the areas of the heaviest usage. Most of the new crop varieties introduced during and after the Green Revolution responded to an additional input of fertilizer and water with significant yield increases. In fact, some previously food-insecure countries such as China have become major producers and consumers of both nitrogen and phosphate fertilizers. The investment has paid off as China has become self-sufficient in basic foods and has even been able to export moderate

amounts of cereal grains (Borlaug and Dowswell, 1994). However, the response to fertilizer appears to have peaked in many places. Moreover, the water and fertilizer used to gain these yield increases are often becoming scarcer and more cost prohibitive (Smil, 1991; Smil, 1994). In 1984 an extra tons of fertilizer boosted production by about 9 tons, but by 1989, the same input only increased production by 1.8 tons. In addition, although 36% of the world's grain comes from the 16% of farmland that is irrigated, the possibilities for more irrigation projects are limited because of the expense and difficulty of transporting water over long distances. The loans for these risky projects have therefore also diminished (MacKenzie, 1994).

The other possibility for future increased food production is through the extensification of agriculture. Extensification occurs when land that has subsequently been fallow or unused for farming purposes is cultivated (Kates, Hyden, and Turner, 1993). This avenue for increased production has worked well in many countries, including the United States, where labor-saving mechanization and plentiful land allowed extensification in the 19th century (Hayami and Ruttan, 1985). Other countries, however, have not had this luxury. Many scientists argue that there is no longer enough arable land left that could reasonably be farmed, especially in countries with exploding populations (Harris, 1995). Social, political, environmental and economic factors all contribute to the limiting of land for farming. Not only is much of the currently non-farmed land unaffordable to the masses, but it is often environmentally fragile and easily eroded. In Africa, an estimated 80% of agricultural growth comes from extensification, but marginal lands that are put under production are often depleted of all their fertility within a few short years. Scientists stress that there needs to be a better balance between expansion and intensification (Lele

and Stone, 1989). Worldwide, seven million hectares of soil, about 0.5% of the world's farmland, are lost to erosion each year. Other agricultural lands are lost when irrigation is not longer possible. Many aquifers are drying up because they contain very old groundwater, collected over centuries, that cannot be replaced quickly enough by precipitation. The water level in the Punjab in India, for example, is sinking by one meter a year (MacKenzie, 1994).

Very real and challenging obstacles exist to increased world food production either through intensification or extensification. However, many in the scientific community claim that these constraints can be overcome. In order to do this, CGIAR, Consultative Group on International Agricultural Research, claims that we need to double production on existing farmland over the next 50 years. CGIAR, which consists of 13 independent research institutes worldwide, is looking toward a "super-green revolution" despite outspoken critics like Lester Brown of Worldwatch who claim that another Green Revolution is not possible. Members of CGIAR operate on the belief that there are "in theory, no major physiological, genetic, or agronomic constraints to achieving the necessary yield gains to match rising populations with comparable increases in food production on existing arable land" (Pearce, 1996, 15). This optimism is based on, among other things, plans to introduce or increase fertilizer use in low-usage areas such sub-Saharan Africa which presently has the lowest fertilizer consumption rate of any of the developing regions of the world (Borlaug and Dowsnell, 1994). Classical breeding techniques may also be employed to boost yields even further through the introduction of new crop varieties. Genetic engineering may help to make crops more resistant to pests and diseases. At present genetic engineering is still limited in terms of creating yield-

boosting new varieties because yield “depends on a complex and poorly understood interaction between many genes and their environment” (MacKenzie, 1994, 28).

Mechanization, new farming techniques and increased agricultural extension are other ways in which production might be increased in the developing world.

Food Production in Africa

A universal cry has gone up over the immediate food crisis in sub-Saharan Africa. In the early 1960s Africa was 98% self-sufficient in food. By 1971, the continent only supplied 89% of its own food needs and only 78% by the end of the 1970s (Bradley and Carter, 1989, 104). In stark contrast to other developing regions of the world which have been experiencing per capita increases in food consumption, Africa's agricultural output has fallen well behind its population growth (Hyden, 1986; Borlaug and Dowsnell, 1994; Smith et al., 1994). In a single year in the 1980s, there were serious food emergencies in 23 of the countries on the continent (Christensen and Witucki, 1986).

In Africa, as in many parts of the developing world, the debate over food production and food self-sufficiency centers around whether to approach the issue in a big or small way (Peterson, 1986; Tomich, Kilby, and Johnston, 1995). Immediately after many African countries gained their independence in the 1960s the focus tended to be on industrialization and large agribusiness ventures. Many government officials, economists, and scientists purported large-scale farming as the solution to the food production problem in Africa for a variety of social and economic reasons. Many still hold to the belief that big is the only way to go for Africa. Norman Adams (1988), a soil scientist and senior lecturer in crop production in Swaziland, summed up the four common reasons cited for this approach. First of all, small-scale farming keeps too many people on the

farm with the rural population averaging 70% or more in developing countries and only about 12% in the developed countries. This keeps people from employment in the service and industrial sectors. Secondly, the physical presence of small farmers hinders the development of big, modern farms which can boost cash crop production for export. These big farms in Swaziland, for instance, have employed thousands and has provided nationals with “decent housing and allows them to shop in well-stocked supermarkets.” The third reason for big farms, Norman claims, is that small farmers lack initiative. If they had initiative, he says, they would “find some more rewarding occupation.” In addition, many of the college-educated nationals have no desire to return to the farm and subsistence farming after experiencing the modern conveniences at the universities. Last of all, he claims that traditional farming is an “environmental disaster” in the way in which it responds to population increases. Overgrazing and farming unsuitable land, for instance, are common responses to population pressures. With the continuing population increase in Africa, Norman claims, “Traditional agriculture is not sustainable” (Adams, 1988, 89).

Since the floundering of African agriculture in the past two decades, however, the focus has shifted somewhat back to the small subsistence farmers who still make up a large percentage of the population. In fact, in the mid-1980s the director general of FAO admitted that attempts to modernize African agriculture had not been successful. He said, “Neither the green revolution technology of Asia nor the capital-intensive methods of Western agriculture have proved viable in the very different conditions prevailing in most of tropical Africa,” (Cross, 1984, 5). In addition, he went on to list the four reasons that he believed agriculture was failing in Africa: (1) failure to transfer successfully to Africa

the agricultural technologies that have turned Asia around, (2) the effects of underdevelopment, (3) economic mismanagement, and (4) political strife. However, the FAO has seemed faithful to its push to modernize anyway (Cross, 1984).

Nevertheless, some organizations with a history of commitment to "big" agricultural projects in Africa are now opening the door to smaller, more traditional ones. The International Fund for Agricultural Development of the UN spent almost \$600 million in 1994 on projects to sustain and develop traditional technologies with smallholders in Africa. This is the first of such funds from the UN which encourages "appropriate technologies" although these have long been promoted by organizations such as Oxfam. While increased food production was certainly one of the goals, the other was to attempt to stop the decline in the fertility of soils in Africa. One such project helped support the simple technology of building stone walls to prevent erosion. Bulldozers had previously tried to build dikes to slow erosion, but had not been successful. The building of the stone walls raised crop yields by one-third in one area of funding. In addition, the fund managers encouraged farmers to stay with traditional drought-resistant varieties of grain instead of switching to the high-yielding new varieties of maize which can fail to produce or produce very little in years of poor rainfall (Pearce, 1994a).

World Food Distribution

Whatever the successes in agriculture over the next few decades, there may not be any appreciable decline in the number of people suffering from hunger or malnutrition. As mentioned previously, although enough food is presently being produced to feed the world's present population and beyond, millions still go hungry (Bradley and Carter, 1989). While hunger is sometimes the result of proximate causes such as war, drought,

or crop failure, it is often the result of structural problems which are basically a “political creation.” Often the proximate causes are only “triggers” of hunger and nutrition problems in already existing “spaces of vulnerability” (Young, 1996; Watts and Bohle, 1993). Proponents of the distribution theory claim that the structural problems underlying all hunger are rooted in lack of access to food must be looked at on many levels beginning with the international down to the household level (Payne, 1986; Gakou, 1987). The power and ability to obtain food, or the ability to “command” food, can be affected by a number of circumstances from a person’s inherited or acquired social status to their placement within the international, national, regional or household social systems.

There are two main bodies of evidence and arguments which appear point to distribution, not production, as the basis of the hunger problem. First of all, many claim that enough food is being produced despite the decline in increases of world food production. Therefore, overpopulation is not the problem; the incidence of hunger is not directly related to population density. The amount of people an area can support is dependent on “the way in which production and the distribution of its benefits are organized” (Bradley and Carter, 1989, 105). Secondly, many claim that even if more food is produced, it is unlikely to benefit those who are truly hungry and malnourished. For example, much research has shown that the Green Revolution only exacerbated many of the inequalities and problems of the poor. Moreover, if another “super” green revolution takes place, it is likely to occur on land that is blessed with good soil and plentiful water in countries with strong governments, markets, and infrastructure. In other words, it is unlikely to take place in the poorest of the developing world’s countries. It will be a recipe for agricultural revolution in “Kansas, not Kathmandu” (Pearce, 1996). Most of

the world's rural poor live on the worst land which is least capable of intensification or are completely landless. What is needed, many in the distribution camp claim, is access to and money for food for the poor, not simply increased food production (Pellett, 1983; Grigg, 1997).

Food Distribution in Africa

Scenarios from years of surplus production in the least food-secure continent of the world, Africa, support the assertions that food surpluses do not always translate into decreased hunger and malnutrition. In the early and mid-1980s, several countries in Africa actually had bumper crops. The problem, however, was that the world had become accustomed to providing food aid to Africa in the form of grain, not money. When Africa produced a surplus crop and actually had grain to sell to the world, the donor nations were immobilized because they could not easily turn grain donations into cash donations. World grain prices were already depressed because of the grain glut caused by subsidies to the American and European farmers. These donor countries simply did not need grain; however, a few countries were able to find creative solutions. Australia, for example, swapped the kind of wheat that is preferred in Zimbabwe for their maize and sent that to Botswana and Mozambique in order to fulfill their donor commitments. Other donor countries, unfortunately, were simply unable to help Africa with its surplus problems (MacKenzie, 1985).

In addition to international trade problems, there were major problems in selling the surplus within Africa. First of all, the glut caused grain prices to drop. Secondly, for countries that did have potential buyers, other problems existed. In Zambia there were not enough bags to ship and store the grain. In other countries there were not enough trucks

or the fuel to operate the trucks in order to transport the surpluses. Even within some countries it was impossible to move the grain from the area of surplus to areas of need (MacKenzie, 1985). In response to these supply and demand problems, Burkina Faso abolished its grain marketing board in order to allow local purchasers to set prices according to the market. This was done in hopes that the grain-poor north would be able to purchase grain at a reasonable price. Unfortunately, the grain-rich south set prices artificially high in hope that donors would buy it for the north. In the end, the north failed to benefit.

Development and Agricultural Strategies in Africa

Tomich, Kilby, and Johnston (1995) categorize 58 of the countries in the world today as CARLs: countries with abundant rural labor. They point out that this term CARL hails back to the medieval term used for "countryman" or a "man of the common people" (Tomich, Kilby, and Johnston, 1995, 1). In the world today it is estimated that there are over 3 billion people, almost 60% of the world's population, living in CARLs. These countries are often plagued by underdevelopment, poverty, and generally low quality of life for the majority of the people. These qualities are undoubtedly tied to the fact that the population is overwhelmingly agrarian and rural. In general, CARLs tend to have low per capita incomes, low productivity of farm labor, an inequitable distribution of farmland, and an unusually high population growth with a majority of the population under the age of forty. Within sub-Saharan Africa, the population growth rate is a staggering 3% with almost 50% of the population under the age of fifteen (Thorbecke, 1995). For these reasons, CARLs are of the utmost interest to those involved with development, agriculture and the plight of the impoverished.

By definition the CARLs of the world have not yet reached structural transformation. In fact, many are probably decades away from structural transformation, defined as the process in which economic activity and the majority of labor shift away from being based in the agricultural sector to the manufacturing and services sectors. At the point of structural transformation the absolute size of the agricultural work force will begin to decline. In other words, structural transformation occurs when the actual number of agricultural workers is less in the present than it was the year before. Because of the rapid population growth in most CARLs, especially in Africa, this is a slow process and can actually happen years after the labor force in agriculture has fallen below 50 percent (Tomich, Kilby, and Johnston, 1995).

Therefore, for most of the CARLs of the world, the majority of the population, for the present, will remain agrarian. If development is to occur, then it must be through the development of the rural economy by raising agricultural production and expanding rural labor. A strategy must be adopted, based on the facts of the structural and demographic characteristics of these countries, that speeds up structural transformation while at the same time provides a reasonable standard of living for the rural masses. In order for this to occur, the agrarian structure has to be considered. The agrarian structure is the distribution of farms around the mean farm size. This distribution can be skewed from a unimodal structure, where most farms are clustered around the mean farm size, to a bimodal structure, where there are many small farms, but most land is controlled by a few large farms (Tomich, Kilby, and Johnston, 1995).

The Unimodal and Bimodal Development Strategies

In CARLs where land is scarce or inequitably distributed there are two main agricultural strategies that can be pursued. The first approach is the bimodal strategy which places emphasis on large-scale farming. It encourages greater production on large farms based on the theory of economies of scale. The belief is that modernization and development can come most easily through investment in large farms through policy support, inputs, technology, and extension services. The multimodal argument is similar except that it stresses development aimed at both large and small farms. Cohen (1989) argues that the unimodal strategy in essence puts all the development eggs in one basket. He says that it increases the risk of failure, does not necessarily employ more people in the rural areas, does not always encourage equity or increase overall production. The unimodal strategy, Cohen claims, is based on the assumption that productivity can be raised on small farms. This is a confusion between "fact and hope" (Cohen, 1989, 21).

The unimodal development strategy, or broad-based strategy, holds that development should focus on small farms because the majority of people in CARLs are smallholders on whose farms most production is occurring. In Africa, for example, some 85% of all food produced is grown by rural smallholders (Macgregor, 1990). Instead of directing resources at a few chosen large farms, more equity and efficiency can be achieved by promoting productivity on the greater number of small farms. Many argue that the unimodal strategy is the best for Africa because it will help the most productive farmers, the smallholders, produce more, will decrease malnutrition, help employ more people, decrease the income gap between the rich and the poor and ease the acceleration of Africa's land scarcity problems (Johnston 1986; Peterson, 1986).

The basis for the unimodal strategy is efficiency. Supporters of this approach claim that it is the most effective and productive way to increase agricultural output in countries already dominated by smallholders. It allows for the utilization of the most abundant and available resources within the developing countries. Other strategies which are based on resources that are not presently available or likely attainable in the near future are strategies based on questionable conditionalities. In addition, although the basis for the unimodal development strategy is not equity, but efficiency, many claim that this approach benefits the greatest number of people within CARLs since the greatest number of people are smallholders. In Africa, the least urbanized continent in the world, where 70% of the population is rural, this would seem to be the case (Morna, 1990).

Agricultural Intensification and Innovation in Africa

The unimodal and bimodal strategies are basically arguments over an age-old debate concerning the intensification of agriculture. Agricultural intensification can be defined in numerous ways and almost every theory and theorists describes the factors involved in intensification in a slightly different way. However, there are several similar and overlapping themes within most definitions. Netting (1993, 262) defines intensification as "the process of increasing the utilization or productivity of land currently under production, and it contrasts with expansion, that is, the extension of land under cultivation." Boserup (1965) generally describes intensification as the frequency of land under cultivation or the shortening of fallow periods. However, she asserts that the next stage in intensification following the decrease in fallow period will be the additional input of labor and eventually other inputs. While Boserup views extensification as a separate process, one that usually occurs before intensification begins, she does include in

intensification unused lands that are part of the community territory but can be intensified by short fallows and more frequent cultivation (Boserup, 1965). Grigg (1976) includes in his discussion of intensification more frequent cultivation but also the use of higher yielding crops, the application of more labor-using farming methods or the adoption of new farming systems. Lele and Stones' (1989) definition, on the other hand, also considers output as measured by the shift from low to higher value crops, increases in yield per hectare for any given crop or even a shift in crop production from areas of poor production to areas with higher production potential. Brookfield (1984), in his "revisitation" to intensification, is careful to distinguish between innovation, defined as anything that introduces qualitative changes into a system of production, and intensification, defined as the increased application of labor or other inputs within a particular socioeconomic and technological system. Intensification, Brookfield notes, can occur without innovation.

The variation in definitions symbolizes the problems in actually pursuing agricultural intensification in any region. There is often much disagreement on how to best increase production, especially in sub-Saharan Africa where environmental problems are mounting, population pressure is growing, agricultural output is falling, and current economic circumstances are limiting. The problem exists not only in what methods to use in intensification, but in how best to encourage intensification within the farming community in Africa. Many, including Boserup and Malthus, have long held that population pressure will eventually force intensification. Others claim that available technology will drive intensification, while others still believe that market forces will be the true engine in African agricultural growth.

Population pressure and agricultural intensification in Africa

Ester Boserup developed her theories of population-driven agricultural intensification after observing smallholder patterns after World War II. She recognized a pattern that did not coincide with the prevailing wisdom in economics. Through her observations she found that intensification did not grow primarily out of technological innovation, science, or the use of new energy sources. Instead, she found increasing population density (or land scarcity) to be an independent variable and driving force in intensification. Although she does not, in her theory, explore the reasons for population growth, she asserts that people will first extensify or expand onto new land where possible. Once the available land is filled, they attempt to extract more output from the limited land supply, initially by increasing cultivation frequency. She defines five stages of the shortening of fallow: long fallow of 15-25 years, bush fallow of 8-10 years, short fallow of 1-2 years, annual cropping of a few months, and then finally, multiple cropping with no fallow (Boserup, 1965). After this, labor and other inputs will be increased. This intensification, however, will not happen without population growth as smallholders will not willingly take on additional work without the necessary pressure. While her theories diverge from the more rigid theories of environmental, technological, demographic and political-economic determinism, she still attempts to account for the same set of empirical observations (Netting, 1993).

Cross-cultural studies have indeed shown that Boserup's theorized relationship between population pressure and land use will hold even in varying climates, rainfall levels, soils, crops, and tools. In fact, many studies show that not only is there a change toward greater intensification with increased population pressure, there is also the reverse trend

toward extensification with decreased population pressure. Pingali, Bigot, and Binswanger (1987) support this with research from nine countries in sub-Saharan Africa that shows intensification was initiated by a decrease in the amount of cultivable land available per person. The increased concentration of population, they note, does not have to be from population growth, but can also result from other changes such as war or shifting land-use patterns. Netting and others support the reverse trend with research on the Koyfar of Nigeria who have migrated to sparsely settled lands and begun extensive agricultural practices even though they were accustomed to and practiced in more intensive farming techniques (Netting, 1965; Netting, Stone and Stone, 1989).

Others, such as Chayanov, have supported Boserup's theories of intensification, but have focused primarily on the micro- or household-level changes in response to increased population density. Based on his studies in Russia, Chayanov found that peasant households, viewed as a unit of production, seemed to violate the expected responses of a for-profit farm. In his research, peasant households that relied on family labor and small amounts of capital showed no tendency to increase output in order to maximize profits. If labor or profit increased, the household would simply respond by working less instead of earning more. The secret, Chayanov theorizes, is that in peasant agriculture based on household labor, this labor cannot be calculated in terms of market wage-rates. The family farm operates on rationality based on satisfaction of household needs and the negatives attached to heavier workloads (Chayanov, 1966).

Many population-driven intensification theories are still based in large part on the ideas first put forth by Malthus in the 1700s. He dealt with the relationship between land, population, and agricultural methods as Boserup would centuries later, but Malthus

theorized that eventually "checks" on population growth would arise from limitations on agricultural growth. He asserted that when extensification is no longer possible within an area, there are preventative checks to population growth such as late marriage, celibacy, and contraception, as well as out-migration where possible. There are also "positive checks" on population growth such as war, malnutrition and disease. Malthus viewed land and technology as static or as constraints to increased agricultural production. In this light, Malthus' model hypothesizes that as population increases, food production per capita will fall and eventually birth rates will decrease, death rates will rise, and population growth will decline until there is a constant population level. At the time Malthus developed his theories, his ideas on technology were probably more feasible. If technology did arise and was adopted, he believed, there would be greater food production, thus higher welfare and higher population growth.

Others now believe, however, that as countries evolve from being traditional societies into industrialized societies that there will not necessarily be a population boom in response to a higher standard of living. This 'demographic transition,' in which high fertility and mortality rates both decrease over time, will finally culminate when birth rates are equal to death rates and population growth becomes negligible. Davis (1963) expanded the theory of demographic transition after observing the responses of populations in Japan and Western Europe as mortality began to decline and population growth began to rise. He found a multiphasic response in which people responded not only economically, but demographically. Across various nationalities, languages, and religions, people in all industrializing nations tended to respond to increasing population density by marrying later in life, practicing celibacy, using birth control or by emigrating.

Although demographic responses are widely ignored by Boserup and others, Bilsborrow (1987) stresses that when considering agricultural, and thus economic, responses to population pressure, demographic changes must also be taken into consideration. In fact, a demographic approach might be the first response, followed by an economic or 'demographic-economic' response, depending on a number of variables such as existing level of living, possibilities for intensification, or availability of additional employment within an area.

While the issue of the degree of population pressure in Africa is widely debated, Lele and Stone (1989) argue that a Malthusian scenario may be occurring in areas of the continent. Pingali and Binswanger (1988) present evidence that farmer-based innovations in Africa may be incapable of rising to the demands of the growing population. They argue that large-scale science- and technology-based innovations must be made available, administered, and managed by the state in order to speed up the process of intensification. This has many implications on the development of agriculture in Africa in that waiting for the "natural" process of innovation might be detrimental. With population growth rising more quickly than agricultural production growth in most African countries, a Malthusian response is possible without immediate intervention (Brown, 1994; Borlaug and Dowswell, 1994). For example, Goldman (1993) in his study in Imo State in eastern Nigeria found that while farmer-based intensification has occurred in the area, biotechnic inputs are increasingly needed in order to keep up with population growth. Martin (1993), in her study of the Ngwa region of Nigeria, discovered that the people there have continually searched for alternatives for increased production as Boserup predicts. However, as the diversification process in the area is becoming more difficult to maintain,

greater agricultural intensification is needed to meet food demand. Martin believes that if the appropriate technology and assistance and the right incentives are provided, then increased agricultural production can occur.

Technology and agricultural intensification in Africa

In technology-driven theories of intensification, there is believed to be a natural evolutionary process from the use of simple tools such as the digging stick to more sophisticated technology such as animal traction or the tractor. Many of these theories assert that simpler forms of technology, which can include knowledge, skills, or new tools, translate into lower food production while more sophisticated forms of technology result in less labor and increased food production. Invention or diffusion of new technology is the key to intensification that leads to greater output and bigger farms. Based on these theories, farmers can produce more on limited land only with increased technology. Its absence or presence can be used as a measure of intensification (Brookfield and Hart, 1971).

Other researchers in the area of technology and intensification, however, assert that technology also has its costs and can sometimes increase labor demands depending on the type of technology and the environment. It is not always suited to confined areas or certain farming systems. Netting (1993) gives the examples of innovations which can be easily adopted without additional cost or labor, such as a new calendar which more closely approximates seasonal planting periods. Other types of innovations, however, are not so easily adopted. Simon (1981) divides technology into "invention pull" innovations and "population push" innovations. Population push innovations, like irrigated multicropping, often require more labor; therefore, this type of technology may not be adopted unless

population forces the change. In addition to possibly increasing labor needs, studies have shown that while technological change may be part of intensification, it does not always translate into higher production per unit of land or greater labor efficiency (Conelly, 1994). Pingali, Bigot, and Binswanger (1987) found that yield per hectare in Africa increased with intensification, but there was no significant relationship found between yield and the use of animal traction or tractors. Intensification can take place without labor-saving technology, but technology can significantly affect the pace at which intensification takes place (Smith et al., 1994).

The question that development specialists in sub-Saharan Africa are forced to ask in relation to technology-driven intensification is: Can the availability of technology alone induce intensification? Many programs designed to diffuse technology in Africa and in other developing countries have indeed failed to inspire intensification among smallholders, but the reasons for these failures are difficult to determine. Based on Chayanov and others' theories, if pressure from population growth or market incentives are lacking, many smallholders may have no reason to adopt new technology unless it is labor-saving. Binswanger (1986, 474) states that "payoffs to different types of technical changes are dependent on the relative scarcities of the factors which are saved by the technical change." The four main agricultural inputs-- land, labor, mechanization, and purchased inputs--will only be used in greater quantities by a smallholder if the addition either increases yield, saves labor or enhances the quality of the product.

Although technology issues are complex, they have been widely considered in the development of Africa. It is now widely agreed that development policies must be in place which can be efficiently used by small-scale farmers and which are "divisible" (Tomich,

Kilby, and Johnston, 1995). In essence, the technology must be suitable and feasible for the reality of the circumstances within Africa. Fabayo (1996) emphasizes the need for the development and diffusion of appropriate technology. He cites the example of tractors which have been encouraged for smallholder use while technology that can be used in a labor-abundant, land-scarce situation is much more appropriate. Undue weight has, in the past, been placed on capital-intensive, labor-saving technology for big farms while what has been needed has been labor-using, capital- and land-saving technology for small farms. Even when seemingly appropriate technology is made available, it is often not adopted because it requires a restrictive amount of additional inputs, knowledge, capital or market availability (Eicher, 1995). Not only does this type of technology support equity and provide help for the majority of the rural population, but it increases efficiency as an inverse relationship has been shown between farm sizes and production per unit of land (Tomich, Kilby, and Johnston, 1995).

Markets and intensification in Africa

In addition to population pressure and availability of technology, the theories of market-stimulated intensification have been widely considered, especially in relation to development in the non-industrialized countries (Stone, Netting, and Stone, 1990). These theories have their beginnings in the works of Tax (1953) and others who assert that once farmers accept commodity production then they will respond to the market limited only by the constraints placed upon them. Smallholders will maximize production to the level of maximum reward (Kates, Hyden, and Turner, 1993). Many of these original market theories have recently merged with that of "induced innovation" in which the technological and institutional changes that are needed to develop agriculture are created by

smallholders in response to resource endowments and demand (Hayami and Ruttan, 1985; Binswanger, 1986). They contend that the changes in the availability of one factor will cause another more abundant factor to be used instead. This can include more than just land and labor; any resource that will increase production may be used. Even a shift to the use of a higher-value crop can be considered induced innovation. The substitution of a higher-value crop for a lower-value crop can occur because of market access under the right conditions such as having the necessary infrastructure needed to utilize the market (Binswanger and McIntire, 1987). Studies show that higher prices and the elasticity of demand can encourage intensification and may be very different from population-driven intensification (Goldman, 1993).

Development studies in Africa have focused heavily on the issue of market-driven intensification since many of the structural adjustment programs, which should provide incentive for producers by the devaluation of currency among other things, are based on the assumption that smallholders can and will respond to market incentives (Krugmann, 1995). Killick (1995b) in his examination of the "flexibility" of the African economy explores the response of the African farmer as both consumer and producer. He finds that the existence of the parallel market or second economy provides strong evidence that the African smallholder is indeed responsive to market signals. However, one of the major issues surrounding this is the ability of the African leadership to provide an "enabling environment" under which the correct response can take place. Even the World Bank (1992) admitted that more than market incentive is needed to encourage growth. For example, if infrastructure is poor, policies are weak or institutions, such as the marketing boards, are constraining and work against increasing farm-gate prices, farmers are unlikely

to react quickly and effectively. In addition, the availability of appropriate technology and inputs, such as fertilizer, higher-yielding crops, extension services, and adequate transport systems are of crucial importance in providing a suitable enabling environment in which farmers are able to respond (Duncan and Howell, 1992).

Economists and development specialists are often interested in the six "I's" of agriculture which ultimately affect the incomes and quality of life for farmers and rural dwellers in Africa. These are innovations, inputs, infrastructure, institutions, incentives, and initiative. Economic development in the agricultural sector must at some level be concerned with each of these, although the weight of importance of each individual factor is often difficult to determine (Tomich, Kilby, and Johnston, 1995). Most present-day development specialists would agree, however, that incentive and initiative are critical to agricultural success in Africa. For this reason, a major aim of macro-level stability and adjustment programs is "getting prices right" so that the farmer has the financial incentive to produce more. If farm-gate prices are stagnant or declining, especially if at the same time world-prices are rising, a farmer is much less likely to work hard to increase his or her yield. Marketing policies must be conducive as well. Since before independence many African countries have been using market boards as a way of taxing farmers by paying them well under world prices. The gains from this "tax" were supposed to be funneled back into agriculture, but often have instead made their way into other public services or into the pockets of the elite (Bates, 1981). Policies affecting these unfair government interventions should in theory increase incentive, thus increasing individual initiative and ultimately production and income. However, in order for incentives to be effective, the proper institutions, such as extension and support institutions, must be in place. Many

non-price factors influence agricultural output so greatly that price incentives do not necessarily translate into greater production. Killick (1995b) illustrates this point in his discussion of the relative inelasticities of agriculture in Africa in response to price incentives.

The question of deciding consequence for development specialists, however, is, given the proper enabling environment, whether or not farmers in Africa will respond solely to market influences without growing population pressure or the existence of new technology. Chayanov (1966) and others argue that "peasant" thinking will preclude a reaction to market signals alone. Hyden (1980) in his book on ujamaa in Tanzania also explores the complexities of the peasant household and modes of production. Although he does not rule out intensified agriculture and production based on market changes, he does warn that the mindset and understanding of a smallholder in Africa is far removed from the current "Western" development strategies. Turner and Brush (1987), however, contend that except for the most isolated smallholders in the developing world, most farmers will react to both population pressure and market influences by intensifying although the relative causal importance in any intensification sequence may be difficult to determine.

The Unimodal Agricultural Strategy in Africa

The much-debated issues of agricultural intensification are of particular significance in Africa where population is growing exponentially while agricultural production is stagnated or declining. It is of vital importance that researchers, policy-makers, national and international leaders come to a consensus concerning how to best inject new life in the agricultural systems of Africa. As mentioned previously, there are

two dominant strategies, the unimodal and bimodal strategies, presently being employed in Africa and elsewhere in the developing world. Although sound arguments can and have been made for each of these, there are many sound reasons for the support given to the unimodal development strategy in CARLs (countries with abundant rural labor), particularly in Africa. As mentioned previously, in theory and in practice it has been shown to be not only the most efficient way in which to increase agricultural production, but also the most equitable way in countries in which the majority of the population are smallholders. The unimodal strategy allows for the utilization of the most abundant and readily available resources and encourages the adoption of the most appropriate technology. It may be carried out in land-scarce countries, even those which have not undergone land redistribution and in which the land ownership is concentrated in the hands of a few. In addition, it takes into account and fully utilizes the innate knowledge and power of the "peasants" or smallholders themselves, not depending on the adoption of "Western" or culturally non-specific practices in order to achieve success.

The unimodal agricultural strategy and technology

Few would disagree that technology and innovation are necessary for agricultural development in African countries with an abundance of rural labor. However, many would argue that the wholesale adoption of technology from developed countries is not always wise. While developing countries can undoubtedly benefit from being "latecomers" in development by adopting and modifying existing technology, much of it from the industrialized world is too expensive, too dependent on high maintenance and technical support, too rapidly changing for developing countries to keep up with, or just outright unsuitable for the needs, environment or culture of the CARLs of the world. Many

African countries in particular are technologically dependent and have made the repeated mistake of not being selective in their choice and adoption of technology (Fabayo, 1996). As has been proven repeatedly throughout development history in other countries such as the United States and Japan, the adoption of the appropriate technology is critical to development. As Hayami and Ruttan (1985) contend, the success in both Japan and the United States was due in part to "the capacity to develop agricultural technology to facilitate the substitution of relatively abundant factors for scarce factors in accordance with market price signals."

Especially in countries that have not yet gone through structural transformation and are heavily dependent on the agricultural sector, the adoption of technology must be based on real, not outwardly perceived, needs, demand by the people, and on a logical assessment of available resources. In most developing countries, this means technology which is labor-using, capital-saving, and land-saving. For example, in land-scarce countries or in countries where small farms dominate, such as in Africa, the primary resource available to smallholders is labor. Particularly for small farmers who subsistence or only moderately involved in cash-cropping, there is no available capital and/or credit for investing in expensive, land-saving technology. The wisest choice of technology, therefore, is often not the "lumpy" indivisible type, but the type that is labor-using and increases output per unit of land. Kasfir (1993), for example, found that there was no comparative advantage for Uganda farmers to use more technologically advanced tools over a hoe because of the rugged terrain and the size of the plots and types of crops being farmed. As Schumacher (1973) pointed out in his book Small is Beautiful, agricultural strategies have too often attempted to replace the "pygmy property of the many" with the

"giant property of the few" without acknowledging that within the small farm there is often freedom, efficiency and creativity. Fertilizers, pesticides, and high-yielding crop varieties are all divisible, attainable inputs which can be afforded by smallholders when the proper policies and support systems are in place. In addition to increasing output without heavy capital outlay, they take full advantage of their main resource, labor. Even with greater labor use, opportunities for increased production per worker are still high if inputs are applied properly. Ideally, under the unimodal model these types of inputs are encouraged by the right types of policies and programs.

This labor-using strategy should have the additional benefit to development in that it helps absorb the increasing labor force in countries with high population growths. This pull to the farm should at least slow the growing trend toward urbanization. In Africa, this return to the farm is already underway in places as many people, even the well-educated, realize the hardships of city life during these times of economic crisis (Morna, 1990). However, in order to combat the wholesale movement to cities, especially by the young, the education system will have to lay the foundation by teaching practical agricultural skills. As one development director in Senegal said, there is presently "no integration between the country's needs and its supply of graduates" (Horst, Morna, and Jonah, 1990, 17). Not only will education have to realign itself toward the reality of the dominance of the agricultural sector, but the agricultural industry itself will have to be more "productive and competitive so that it can provide employment for the educated" (Horst, Morna, and Jonah, 1990, 20).

The labor-using and capital-saving technology adoption advocated in the unimodal strategy is also land-saving since it is designed to promote greater production on small-

scale rather than large-scale farms, especially in land-scarce countries. Cohen (1989) argues against the unimodal strategy in Africa since some countries, like Tanzania or Ghana, are not facing land shortages. However, population density varies widely across the continent and even within countries themselves and is undoubtedly growing at a rapid rate (Sai, 1986). Displacement of populations in Africa is another serious problem which can lead to sudden high-population densities (Koehn and Ojo, 1997).

For countries in Africa without land scarcity problems, capital is often limited and labor plentiful. In addition, the unimodal model does not rule out expansion as a increased-production strategy. Extensification can work in conjunction with intensification on smaller farms. In this situation, the multimodal model supported by Cohen (1989) might be a reasonable approach if scarce resources are not channeled exclusively to larger farms. Tomich, Kilby, and Johnston (1995) argue that the bimodal and unimodal strategies are indeed not always mutually exclusive.

The unimodal agricultural strategy, land ownership, and reform

The issue of land-scarcity within the unimodal model raises the issue of whether the unimodal agrarian structure or land redistribution is necessary in order to implement a broad-based, or unimodal, strategy. Most advocates of this strategy agree that it is not necessary (Tomich, Kilby, and Johnston, 1995). Numerous examples exist of countries which have implemented broad-based strategies before land reform and despite land concentration among the elite. This has been possible because those who operate the land are more important than those who own the land. In some areas like Latin America, where the skewed nature of land ownership is monumental and deeply imbedded, this may not be the case. However, in other areas, such as in Africa, the strategy can be

implemented on land-tenure arrangements alone. The inverse relationship between farm size and production apparently holds steady even under various tenure arrangements. Studies in Asia show that there are only small differences between input and output intensities between sharecropped and owned farms of equivalent sizes (Tomich, Kilby, and Johnston, 1995). There are extenuating circumstances in which this may not be the case, but in general the issue of ownership of land versus operational units does not present a problem in the implementation of the unimodal development strategy.

Smallholder power and culture in African agriculture

Utilization of existing resources is the backbone of the unimodal agricultural strategy. An important, but often overlooked, resource in African agriculture is the smallholder. As Hyden (1980) eloquently points out in his book Beyond Ujamaa in Tanzania, the power of the "peasants" or smallholders in Africa cannot be ignored. He refers to them as the "uncaptured" peasantry because although history dictates that the rural masses must be "captured" before development can take place, this has not yet happened in Africa. The government, although able to negatively impact the smallholder, is not actually in a position of power because the smallholder still controls agriculture in Africa, the main source of employment on the continent. They are not dependent on cooperation in irrigated areas, for example, and they are much less integrated into the cash economy than in other places in the world. Hyden points out that the smallholder is not totally independent of the government and will participate in politics and government action when there is a chance of obtaining resources; however, in general the smallholder is much more involved and interested in local affairs than in national affairs. "Underdevelopment" is still a mystery to many farmers in Africa because agriculture to

them is their life and mode of production, not something that they can step back from in order to "measure it, devise solutions, and perhaps overcome it, as modern rationality allows decision-makers to do" (Hyden, 1980, 216).

Netting (1993) and others have shown that smallholders in Africa are continually seeking creative and productive solutions to agricultural problems. As many researchers have pointed out, the smallholder has the inside view on what is needed, what resources are available and what steps can practicably be taken. Local "ownership" is critical to making development work on all levels (Berg, 1995). Many argue that indigenous African institutions and free expression are desperately needed in order for Africa to weather its economic and political problems. Solutions to numerous problems can come from the average Africa if they are allowed "to speak" (Ayittey, 1995, 120). Numerous disasters have occurred, as particularly evidenced during the green revolution, when outsiders have transplanted agricultural "solutions" to agricultural problems that were either not viewed as problems by the smallholders or not suitable to the given physical, cultural and economic environment (Monbiot, 1994). Agricultural intensification strategies which consider the generations and years of work and experimentation by the smallholder, are the most likely to be successful (Netting, 1993).

Structural Adjustment and Agriculture in Africa

The decade of the 1980s has been called the decade of structural adjustment. It was a difficult decade because after the oil crisis at the end of the 1970s, the global economy floundered. Sub-Saharan Africa was particularly hard-hit because it had not yet achieved diversification or structural transformation and was still "fragile and vulnerable" (O'Brien, 1991). They were experiencing increasing competition in the primary products

arena, but had failed to diversify. They also had begun receiving less aid than other developing countries, had major problems in communication and transportation, and were heavily burdened by growing debt. All these factors essentially "forced" many African countries to accept structural adjustment programs and their conditions from the IMF and World Bank (Duncan and Howell, 1992).

There are numerous criticisms concerning structural adjustment programs in Africa and elsewhere in the developing world (Berg, 1995). It has been argued that SAPs have had internal flaws since their conception and tend to deal with symptoms instead of root causes (Mackenzie, 1992; Ayittey, 1995). One of the strongest criticisms of the SAPs in Africa, however, has been their lack of attention to agriculture, the foundation of African employment and production. It is difficult to generalize about the effects of SAPs on agriculturalists since smallholder farmers, pastoralists, and wage laborers have varying consumption and production patterns. They can potentially have a positive effect, for example, on smallholders involved in the production of tradable commodities such as cocoa, tea, coffee and tobacco due to the rise in farm-gate prices. Also, in some areas where adjustment programs are implemented effectively, access to agricultural inputs and consumer goods and demand for paid labor have increased (Duncan and Howell, 1992). However, subsistence farmers with less access to goods and services, particularly women not involved in cash-cropping, have in turn suffered (Gladwin, 1992).

Structural adjustment programs have caused varying problems, in varying degrees of intensity for different segments of the African population. First of all, as mentioned above, the lack of focus on agriculture has affected all sectors of the economy. It is evident that much emphasis has been placed on supporting the infant manufacturing sector

while declining agricultural productivity has led to growing food imports. The rural population in turn has had less money to support manufacturing. This can be a deadly formula for development. As O'Brien (1991, 32) argued, a healthy agricultural sector "is an essential underpinning to dynamic industrial growth." Africa has suffered from a "dualistic economy" in which there has been a modern, capital-intensive industrial sector operating alongside a labor-intensive, low capital-using agricultural sector. These sectors have suffered from a lack of linkages which causes stagnation for both. The World Bank has called this lack of connection as the "missing middle" (O'Brien, 1991, 32). Much of this is the result of structural adjustment programs unwillingness to address the very real constraints of the African countries. Many of these countries are limited by harsh climates, poor soils, and growing environmental problems. In addition, there is generally a lack of technology, human resource skills, incomplete markets, poor infrastructure and a lack of capital and necessary institutions. While improved macro-economic conditions may cure many of these ills over the long-run, development may never take place if the present primary sector, agriculture, is allowed to slowly die out.

Prices and SAPs

Devaluation has been a big part of SAPs in an effort to realign domestic currencies with international currencies. This is important to economic stability since devaluation makes imports more expensive and exports more competitive. In theory devaluation should only affect the prices of internationally-traded goods and domestic goods that have substantial traded inputs in their manufacture. However, evidence from countries in Africa shows that when devaluation has occurred prices on all consumer goods have gone up, even on domestic goods. Prices often go up just in anticipation of devaluations as

people know that the hike in price of imported goods, transport costs, and petroleum are inevitable. Wages are continuing to remain level though so that even professionals, much less agricultural families, cannot possibly live on a single income (Due, 1991). These price increases most translate into lowered food purchases. Studies in Nigeria, for example, show that the rise in food prices in Nigeria since structural adjustment has resulted in higher rates of hunger and malnutrition (Elabor-Idemudia, 1991).

Some rural households may be less affected if they are primarily subsistence level or depending on whether they are mainly net purchasers or sellers. However, no one is able to completely withdraw from the market as they have to have money for taxes, clothes, non-food items, and fees for school or healthcare. Higher prices resulting from SAPs are often more likely to affect women, and subsequently children, because women tend to be active in the market and their income is much more likely to go toward the purchase of food and necessities for the family than is a man's income (Scheopf and Engundu, 1991).

Urban dwellers are also affected by the price hikes as a result of higher prices on imports and on the goods coming from the rural community. Since SAPs often require a removal of subsidies from foods being sold in the urban areas, the urban dwellers may suffer as much as their rural counterparts. A study in Ghana showed that deregulation and continuing devaluation has caused the consumption of goods and services to decline. Even traders in the cities report that imports and manufactured goods are beyond their buying capacity. Many women traders have compensated for the lowering of real wages by increasing their own time and labor, which has a significant impact on family well-being (Clark and Manuh, 1991).

Women, agriculture, and SAPs

Proponents of structural adjustment programs in Africa have continually argued that the liberalization of the economy has stimulated more employment opportunities. While this may be true, people with training and financial resources are the quickest and most likely to respond to these opportunities. The poor and the rural, on the other hand, are usually the last to know of opportunities and the last to be given higher-earning positions. Among the rural poor, women in Africa are more likely to be illiterate or less-educated, thus lowering their possibilities of employment all together. Even when increased employment opportunities benefit the men of a household, the women and children are not always beneficiaries as well. Many women have no knowledge about or access to their husbands' money (Elabor-Idemudia, 1991).

In Africa, studies have shown that women do 75% of the work to produce the food consumed, they process 90% of that food, they do 90% of the hoeing and weeding, and 60 of the harvesting and marketing (Lele, 1991). Because of this, structural adjustment programs have especially affected women farmers by changing the inputs available for farming and the incentives for export cropping. In general, SAPs have focused on increasing incentives for cash cropping.. This can be beneficial on a household level by providing income for food, education and inputs into agriculture and on the national level by increasing foreign exchange. Nevertheless, it may not help equally each member of a household because inequitable distribution of income within a household. In Africa it is common for men to control the money from cash cropping while women tend to control food cropping output and income. Therefore, there is not a definite link between increased farm incomes and better well-being for all members of agricultural

households. It can often mean lowered productivity due to untreated illness and malnutrition. Studies show that relatively well-off cash-cropping households have a large amount of down time and spend a good deal of money on curative medicine due to sickness. This could be due in part to the fact that increased incomes are not always spent on purchasing additional food or more nutritious food (Lele, 1991).

Subsidies, agriculture, and SAPs

A major impact of structural adjustment programs on the agricultural communities in Africa has been the removal or reduction of subsidies. Removal of subsidies has been argued for on the basis that this will lead to increased producer prices. Although prices for inputs will also go up, SAPs proponents have argued that greater incomes will counter any adverse effects. This has been of particular importance in the input of fertilizer, as part of the conditional reforms connected to many SAPs has been the decrease in fertilizer subsidies to small-scale farmers. Gladwin (1991b) researched the effects on subsidy removals on women farmers in Malawi and Cameroon, countries in which women produce the majority of food crops. The reality of the removals in these countries has been that poor farmers, even when incomes increase, may not have the money or credit to initially purchase fertilizer and so use and output decline as a consequence. Women are especially hurt because they often only produce subsistence crops and the rise in producer prices does not help at all. Also, they, like many poor male farmers, do not have the money or credit to buy fertilizer even if they wanted to. Simply trying to provide more credit has not worked for a variety of reasons, including the unacceptable risk of owing money. The end result of the subsidy removal, therefore, can be a decrease in fertilizer use by poor farmers, a decrease in food production, and an increase in food insecurity.

Conclusion

As evidenced from the preceding discussion, development issues in Africa, especially as they relate to agriculture, are complex and widely debated in both academic and political arenas. Recent literature indicates that running through the varying development philosophies and theories of late is a theme of renewed emphasis on human development and meeting basic needs. The plight of the most vulnerable groups in Africa --smallholders, subsistence farmers, women and children--are now being taken into greater consideration in development planning. However, hunger and malnutrition still ravage the continent. As discussed in the previous sections, there are optimistic and pessimistic views as to how much development policy and implementation and improved agricultural production and distribution can actually impact the nutritional and health status of the African population. Even if the food is produced and made available, there are still a plethora of problems standing between Africa and a healthy population. The following chapter, therefore, will explore the "acceptability" issues of the hunger problem, illuminating the constraints to better health and nutrition that exist in the culture and institutions of the continent.

CHAPTER 3 FOODWAYS, NUTRITION, AND HEALTH IN A HUNGRY WORLD

The study of food and food security, and therefore nutrition and hunger, tends to be complex, involving numerous elements ranging from the economic to the cultural. However, food consumption issues can basically be divided into two interrelated and interdependent categories: (1) issues concerning food availability, and (2) issues concerning food acceptability. (See Figure 3-1.) The previous chapter discussed those issues surrounding food availability: food production and distribution and the economic environment in which people procure food. While the existence, availability, accessibility, and affordability of food are all necessary elements to the actual consumption of food, another crucial element of food studies is acceptability. Food must ultimately be consumed if it is to serve its purposes. As Pellett (1983,115) stated, "uneaten food has no nutritional value." In other words, food that is available is not always acceptable, just as food that is acceptable is not always available.

The acceptability of foods can be determined on an individual basis or on a group level. Many unwritten food habits of individuals are actually acquired very early in life and tend to be long-lasting and difficult to change. The way in which food is eaten and prepared, the times at which food is eaten, and the amount of food eaten are all elements of human foodways and have cultural and practical roots and ramifications. Therefore, although food choices can be very personal, based on individual likes or dislikes, they are

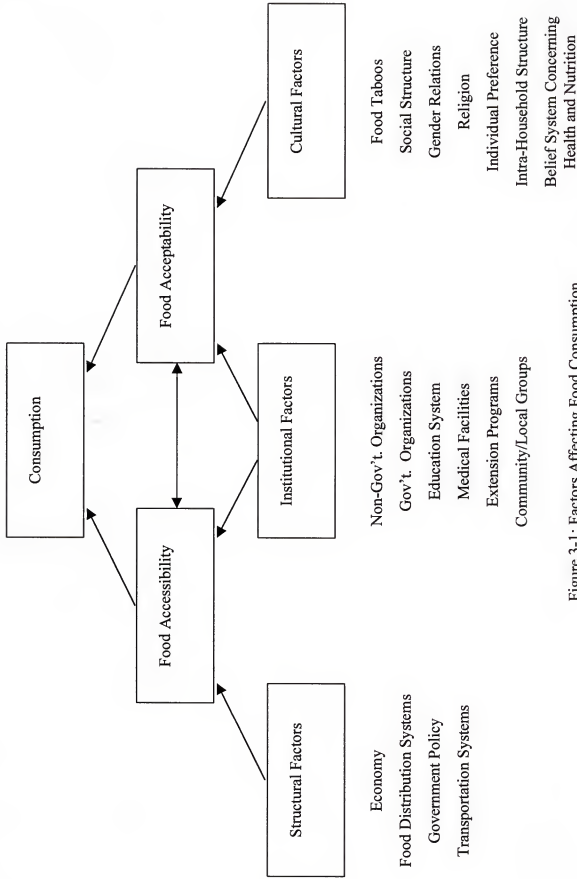


Figure 3-1: Factors Affecting Food Consumption

often culturally- or socially-based. Even when food availability is not a major constraining factor, foods may be accepted or rejected based on myths, superstitions, taboos or even moral grounds (de Boeck, 1994). In addition, foods offered or denied can be symbols of prestige, friendship, reward or punishment. The consideration of these factors makes clear the error in treating food habits as the result of individual choice made on rational, predictable grounds (Fieldhouse, 1995). The study of foodways provides vital knowledge concerning how and why humans acquire, prepare, and consume particular foods and can be instrumental in attempts to improve nutritional levels (Gwanfogbe et al., 1991).

Foodways

Food holds a place of primacy in human life not just because it at the top of Maslow's human need model and is necessary for physical survival, but also because it holds a central position in the activities of our lives (Kanarek and Marks-Kaufman, 1991; Fieldhouse, 1995; Beardsworth and Keil, 1997). Most animals spend a great deal of their waking hours procuring and consuming food. Humans, although often more sophisticated in this techniques, are little different from most other animal species in this sense. In the Western world, only a small percentage of the population is still involved directly in the production of food; however, planning, acquisition, and preparation still consumes much time for many people, either by necessity or by choice. Despite the fact that in developed countries a smaller percentage of household income goes toward the purchase of food than in developing countries, people in industrialized countries still work first of all to meet the basic need of eating (Grigg, 1993).

When economically, socially and culturally possible, eating also represents much more than just satiating biological needs (Sasson, 1990). In other words, "...few people

live just to eat or eat just to live" (Mead, 1980, 225). Meals, for instance, are often a reflection of the organization of families or social groups as they are a major component of culture as a whole. Food has a symbolic nature and consumption creates and reflects who we are as individuals, families, groups, and societies (Cravioto and DeLicardie, 1980). As a French philosopher once said, "Tell me what you eat, and I will tell you what your are" (Drayton, 1970).

Considering the nuclear position of food in the daily lives of the average person, it is not surprising that much thought, debate and research has been directed toward issues concerning food and nutrition, especially in the past two decades (Kanarek and Marks-Kaufman, 1991). Research on agricultural production and distribution, nutrition and diet, hunger and famine, and a host of other social and cultural issues centers either implicitly or explicitly around food and its consumption. The field of inquiry has great depth and breadth not only because of its universal nature, but also because of its infinite variations. The nature of food intake is shaped by geographical, social, psychological, religious, economic, and political circumstances (Fieldhouse, 1995). Food consumption is an activity that all living creatures have in common and yet it can be one of the most distinctive characteristics by which individuals and groups are defined because it is not simply a biological function, but a manifestation of culture. It is the response to both biological and cultural stimuli and it meets both physiological and social needs. For social scientists, the study of food habits, or foodways, has long been important because the attitudes, beliefs, and practices that surround food provide a picture into the heart of the cultural pattern of communities (Cassel, 1977).

Foodways and Culture

Culture has been defined numerous ways, but can be defined as "the acquired knowledge that people use to interpret experience and generate social behavior" (Spradley, 1979, 5). It has also been defined simply as a way of life or as the organization of things, people, behavior, and emotions (Ruttan, 1988). Food habits are an integral part of the way in which people organize their lives and environment. While a few virtually universal foodways or food aversions do exist, experience has shown that the most effective way to predict the food habits of an individual is to study his or her culture or ethnic group. Although many food preferences seem to be very personal, an individual must first be exposed to food in order to develop preferences. Although cultural exposure cannot guarantee that an individual will prefer or reject a certain food, culture is the means for introducing food to individuals. Studies have shown that individual affect, the like or dislike of a food, can be sometimes altered by culture or social exposures and may be dependent on the stage of life when first exposure occurs (Rozin, 1980). Social pressure can, in effect, "force" food habit changes. There are many examples of foods that seem to be universally unpalatable at first exposure, such as alcohol, coffee, tobacco, strong-tasting spices, but many people develop what is often called an "acquired" taste for these foods.

Rozin (1980, 15) suggests two stages to acquiring a taste for a food: the first involves "forced" ingestion through peer pressure or parental insistence, and the second stage involves "internalized motivation" in which a person will ingest a food even without explicit cultural pressure. For example, research conducted in a nursery-school setting found that long-lasting preference shifts in children were achieved by exposure to peers

whose tastes were different from that of the subject. "Socially mediated interactions" with food seemed to elicit change in preferences of the children whereas simple exposure to the food, not in a social context, did not seem effective (Rozin, 1980). Therefore, it can be concluded that although foodways can sometimes be responsive and dynamic, they are often difficult to influence. So ingrained are certain food habits that they will follow groups even when they migrate (Thomas and Earl, 1994).

Foodways and Individual Preference

Although cultural influences undoubtedly shape food habits, even within families or peer groups there are often great differences in food preferences and attitudes. Much research has been done to discover what influences these individual likes and dislikes (Fallon and Rozin, 1983; Lentz, 1991). Because of the difficulties experienced in attempts to positively change food habits in both the developed and developing world, social scientists have recently begun to refocus much of their attention on individuals and small groups, looking for the sources of these intracultural and intraindividual variations in food habits. Some believe that most individual characteristics such as age, sex, body weight and specific enzyme levels have little to do with food habits, while others claim that gender and age in particular can be major determining factors. However, it is often difficult to disentangle these individual influences from cultural influences. In the United States, for example, studies have shown that food habits might be better explained by class attributes such as income, education and occupation than by the "more traditional ethnic distinctions" (Thomas and Earl, 1994, 185).

Nevertheless, there has been a movement toward emphasis on the household, and decisions made on that level, rather than on regional or ethnic groups (Elabor-Idemudia,

1991). Households in similar environments and with similar make-up often develop distinctive patterns in acquiring and distributing food. Reasons for these differences have attracted much attention. As Thomas and Earl (1994, 186) state, "The impact of intrahousehold differences in food consumption should be a focus for both domestic and international research on child health and survival." Cyclic patterns are being explored as sources of this intragroup variation in food habits. Especially in agricultural communities, seasonal changes in labor and food availability can have profound effects on food habits (Huss-Ashmore and Curry, 1991). Even within the developed world, important cyclical patterns based on work and leisure patterns affect food habits (Rozin, 1981).

Foodways and Biology

Some food selection is influenced by biological factors as well as by individual choice and cultural environment. Many food taboos are originally born out of biological or physiological needs (Aunger, 1994). There are some genetically-based universal reactions to foods, such as the avoidance of bitter-tasting foods or the attraction to sweet-tasting foods. Even some individual preferences may have a biological foundation as taste sensitivity in each individual varies. There are also "genetically based metabolic differences" that can affect the way in which a person learns to accept or avoid certain foods. For example, most persons who experience gastro-intestinal discomfort or vomiting after consuming a certain type of food will tend to avoid that food in the future. These biological factors seem to affect the short-term more than the long-term choices, however. Hunger and thirst, for instance, are temporary conditions and may influence the time and type of foods ingested. Despite these biological influences, many agree that food

habits seem less affected by biological factors than by cultural or individual factors (Rozin, 1980).

Globalization or "Delocalization" of Diets

Many experts now claim that in coming years the demand for food is going to continue to rise more as a result of the change in diets than as a result of population pressure (Thomas, 1996). In recent years as the standard of living has risen in many developing countries and as the world has become more of a "global village," globalization of diets has taken place. Young (1996, 102) describes this as the "spatial and social integration of food systems." The "delocalization" of diets began to gain momentum in the early years of colonization, especially of the New World. Delocalization of foods has gained its greatest momentum since World War II and is characterized by a shift from local autonomy to an increasing dependence on an international system of resource appropriation and political power. A primary feature of delocalization is the growing dependence on commercial foods (Pelto and Vargas, 1992). Migration, improved food distribution and processing, and the dissipation of plants and animals among regions are all reasons that delocalization or globalization of diets became possible. In general this process allowed Europeans a better diet but had negative effects in Africa, Latin America and Asia (Little, 1991).

The whetting of appetites for meat is a prime example of a new global food trend. It is a recent phenomenon in many countries with very little meat in the original, traditional diet (Smil, 1994). Since 1950 meat consumption has tripled and the amount of feed consumed has quadrupled, with 75% of the imports of corn, barley, sorghum, and oats in the developing world going to feed animals, not humans. The use of grain for animals

surpassed the grains consumed by humans in 1964 and has been climbing ever since (Robbins, 1992). In the past many countries could meet the challenge of the growing demand for meat by simply putting more idle land into production; however, less and less land for livestock is available. In addition, the need for other inputs, such as water, can be extremely high and the ultimate environmental consequences of animal farming on marginal lands can be devastating. Even if good land is available, the efficiency of producing animal products as opposed to crops for food is low. To produce 1 kilogram of beef, 7 kilograms of grain are needed. To produce 1 kilogram of cheese, 3 kilograms of grain are needed. If the average supply of grain for each person really is 247 kilograms per person per year by the year 2020 as predicted, fewer people will be able to eat meat. At present, the average Indian diet is primarily vegetarian and the average consumption is about 200 kilograms per person. In China this average is 300 kilograms per person and does include some meat in the diet. In Italy this average is around 400 kilograms and in America it is around 800 kilograms (MacKenzie, 1994). In order for the world to continue to meet the demands of the affluent countries for high-protein foods such as oils, meats and eggs, more and more grain, water and energy will have to be diverted to animal feed (Dando and Dando, 1994).

A growing area of concern are the types of foods, such as high-protein or highly processed foods, that are being demanded and produced. Food habits and dietary choices are complex issues in any society and are inextricably intertwined with production and distribution problems. As discussed above, more production will have to take place in order for the world to meet the rising demands for high-protein diets. However, this is basically a "command" of food issue in that those that are economically and politically

powerful will be the ones who are able not only to demand, but to receive, certain types of foods. As Young (1996, 103) stated, "Food flows to the effective markets, not to the people who lack food."

Appropriate food habits and dietary choices are universally critical elements to good health and nutrition. However, it is in the lower-income households, in both the developing and developed worlds, that food-related decisions become a matter of life and death. Studies show that in the poorer households a greater percentage of the budget goes toward food purchases than in wealthier households (Grigg, 1993). As a consequence, there is less "cushion" money to make up for poor food choices. For example, if a household purchases "specialty" foods which are low in nutritive value, such as soft drinks, white bread, or processed sweets, there is less money for important staple foods. If money is diverted toward less important, "extra" foods, then basic needs may go unmet. Although traditional diets are not necessarily nutritionally superior diets, the availability of non-traditional foods has become more of a problem as the developing world food markets are flooded with processed foods from the industrialized world (Pelto and Vargas, 1992).

Social Marketing, Diffusion, and Food Habits

In efforts to change food demands and dietary patterns, policy-makers have often turned to diffusion theory, especially since the pivotal work of Hagerstrand in the 1950s (Hagerstrand, 1967). Diffusion of innovations can be defined as the process by which new ideas are "communicated through certain channels over time among the members of a social system" (Rogers, 1983, 5). The innovations themselves can be ideas, practices, or even material goods that are considered to be new by the culture or individual in question.

The "newness" of the innovation is relative, however, and only has to be new in some aspect to the potential adopter. In general, innovations can be considered to be either consumer, in which they are adopted by individuals or households, or firm, in which they are adopted by firms or entrepreneurs (Brown, 1981; Feder and Umali, 1993). In addition, in diffusion of an innovation, the new practice or idea should be of potential value to the targeted population (Clark, 1984).

Diffusion of innovations is now a central issue in the "marketing" of health and nutritional practices, both in the developed and developing world (Roemer, 1993). Many studies have support the notion that while people can know numerous "facts" about health and nutrition, this is not invariably incorporated into the belief systems that control behavior (Sandiford et al., 1995). Because the presentation of straight facts is not enough to change behavior and because health and nutritional changes are often the most difficult to encourage, many governments and organizations have begun to approach health and nutrition campaigns in a manner similar to that of any product advertising campaign. This is of particular importance as media coverage becomes more universal. Campaigns for improved food habits are frequently overshadowed as advertising campaigns push products such as cigarettes, alcohol and highly-processed foods that are contraindicated in good health (Milio, 1989).

Countries in both the developed and developing world have long attempted to develop effective strategies for influencing the diets of their populations in order to combat overnutrition, undernutrition, and hunger. In the United States, for example, studies in the 1980s showed that 80% of Americans consumed more dietary fat, calories, and cholesterol than recommended, but ate too little fiber. Between 1965 and 1980 there

was a 98% rise in the number of obese children and a 54% rise in the number of obese adults (Milio, 1989). However, under-nutrition also exists in the United States, although less prevalently than over-nutrition. The government, in response to under-nutrition, has pursued a food campaign in which the goal has been to provide adequate and safe food for everyone. The government has proposed to do this in four main ways: (1) income maintenance, (2) special nutritional consideration for vulnerable groups like the young, elderly or pregnant, (3) comprehensive nutritional programs, and (4) nutritional counseling as part of preventative and remedial health care (Winikoff, 1980).

Despite the fact that changing diets for the better in the United States has proved difficult, researchers say that diets do change and that eating habits in the U.S. have changed dramatically over the last century (Milio, 1989). In fact, there are numerous examples of new foods being introduced and readily accepted in many countries. For example, maize has been easily adopted by Africans, soft drinks in all parts of the world, and yogurt, a food of Balkan and eastern European herdsmen, in the United States. However, it has been noted that these changes usually occur because of reasons more "pressing and personal" than the urgings of professionals (Winikoff, 1980, 115).

Changes in health and eating behaviors are among the most difficult to make. Studies have shown, for instance, that rates of compliance with doctor recommendations may be as low as 10% and as high as 75% (Bowen and Tinker, 1995, 47). Because of the challenge in changing dietary patterns in particular, many have urged behavioral specialists to join forces with nutritionists to help instigate change for the better. Behavior scientists often suggest that change be made in small, incremental steps; however, with nutritional problems small steps may not be significant enough to alter the disease risk in individuals.

In addition, maintenance of dietary changes is frequently more difficult than initial change because of metabolic, behavioral and cultural factors. Because each cultural group, and indeed each individual, faces differing circumstances, behavioral specialists are now suggesting that nutritional interventions be tailor-made to meet the needs of the group or individual. Although this is initially much more complicated, the results can be rewarding (Bowen and Tinker, 1995).

Several guidelines have been set forth in developing a public health nutrition intervention program. First of all, the program must focus on populations as a whole, not just volunteers, and change should be within the ability of that target population. The program should ideally be inexpensive, need low-staff intensity, require minimal time be spent between interventionist and participant, and should allow contact and communication to take place through existing channels within the society. Also, interventionists must recognize that in changing diets, new abilities and skills for food preparation are often needed and must be accounted for in program design (World Bank, 1992, 1994a and 1994b; Bowen and Tinker, 1995).

Successful programs have been instituted in areas of the developing world in which "social marketing" techniques were employed and communication specialists and advertisers were employed to help in program design. In one particular program, where the goal was preventing infant malnutrition, mothers were given the understandable, measurable, and attainable goal of seeking a monthly increase in the weight of their children. Mothers were treated as "consumers," presentations were considered "sales" pitches, and a catchy slogan was adopted (Rohde and Hendrata, 1982).

A study of dietary patterns and policy in Norway and the United States illustrates the various directions a government may take in trying to improve food habits within their populations. The U.S. has adopted the market-demand approach while Norway has adopted a policy-driven approach. The United States has allowed the market to shape food patterns and allows the media to help educate on dietary guidelines, strategies and diets. This approach has been adopted in part because scientifically "hard" information, such as that released by the Surgeon General, has proved to have limited effect on dietary habits. More persuasive information is indicated in which the public is convinced that the benefits of behavior change outweigh the output of energy needed to elicit the change. Evidence attests to the fact that a behavior change must be shown to enhance "prestige, power, profit or quality of life" before it will be adopted by Americans (Milio, 1989, 420).

Crisis Diets and Nutritional Coping Strategies

Another aspect of dietary change is that which comes about due to necessity instead of marketing. Especially in the developing world where food shortages and famine regularly occur, segments of the population often must adopt "crisis diets" or nutrition coping strategies (Payne and Lipton, 1994). During times of food shortage, "famine" foods, which are generally high-yielding but low in nutritive quality, are sometimes adopted temporarily. In the developing world these foods are often carbohydrate-rich staple foods such as the potato or cassava (Little, 1991). Research in Africa shows that especially as economic hardships have continued, women have had to adopt numerous strategies in attempt to feed their families. Due to structural adjustment women are often pushed to marginal lands and many times will temporarily lose their male family-members to out-migration. In an attempt to make up for the loss in wages and foodstuffs, women

in Africa typically work longer hours, enlist more help from their children, and grow less nutritious foods that are easier to cultivate and prepare (Spring and Wilde, 1991). One study in Nigeria reports that some households have adopted the "0 or 1 formula," in which families decide what meals to eliminate when food is scarce. A "0" represents a meal skipped and a "1" represents a meal eaten. A household might use the 0-1-0 combination, for instance, in which they skip breakfast, eat lunch and then skip dinner. This coping strategy might be used in combination with other food- and money-saving plans such as reducing overall quantity of food or eliminating more expensive foods from their diet (Elabor-Idemudia, 1991).

Although hunger is often associated with societal disintegration, coping strategies in lean times are sometimes also adopted on a community-wide basis (de Boeck, 1994). Research in Ghana in the 1980s serves as an illustration of both household and community-level coping mechanisms during low seasonal food cycles and the food scarcity due to world recession. The household coping strategies included increasing growing seasons for maize, planting "famine-reserve" crops, and using new methods for processing foods more completely. There was also an increase in dependence on wage labor, especially for men. On a community-level, the people organized committees for building wells and rebuilding farms that had burned due to drought. More land was brought under communal cultivation and people were asked to sell food products first at the local market instead of elsewhere. Many of the coping activities were gender-specific, with the women carrying the greatest increased workload, but cooperation among the sexes and households existed (Dei, 1992). This and other examples from Africa illustrate the successful adoption of coping strategies and adaptive food habits that allow

individuals, households, and communities to survive food scarcities while maintaining societal norms and environmentally sound practices (Monbiot, 1994).

Nutrition, Health, and Development

It is generally agreed today among government officials, scientists, academicians, and donors to the developing world that efforts to meet the basic needs of the population, especially nutritional needs, can be a wise investment with significant returns. Although many of the economic development plans and structural adjustment programs of recent years have failed to adequately address many of the socioeconomic problems in the developing world, new emphasis is now being placed on the investment in "human capital" (Thorbecke, 1995). One reason for this realignment in thought is simply the magnitude of socioeconomic problems facing the developing world. It is estimated that one-third of all deaths of children in the non-industrialized countries can be at least partially attributed to malnutrition. Also, a considerable portion of pregnant women in these regions are affected by nutrition problems such as iron deficiency (Del Rosso, 1992). Nutrition and health problems of mothers ultimately affect the quality and sometimes the length of their children's lives. In addition, poor health and nutritional status impacts the overall efficiency and productivity of a community and country. Malnutrition, for example, can cause wasting and stunting in children and cause reduced physical capacity in adulthood. Evidence has shown that malnutrition can also delay or permanently affect a child's mental development (Caliendo, 1979; Whitney and Rolfes, 1996). Both of these results of malnutrition can seriously impede quality of life and work productivity through the generations (Del Rosso, 1992). Since a significant portion of the population in countries which have not yet gone through demographic transition are under the age of fifteen, the

outcome of malnutrition in children can be particularly devastating for the future (Tomich, Kilby, and Johnston, 1995).

Nutrition and health problems stem in great part from poverty (Pellett, 1991). At an aggregated level, poverty and malnutrition are positively correlated (Biswas and Pinstrup-Anderson, 1985). Infant and childhood mortality rates are the highest among the impoverished in almost every country, both in the developed and developing world (Stanton, 1994). However, malnutrition and poor health are not a necessary condition of poverty, nor is poverty-alleviation a necessary cure for nutrition problems, as countries such as Sri Lanka have shown (Hertz, Hebert, and Landon, 1994). The benefits of additional income can be negated by the presence of poor feeding practices, infectious disease, poor sanitation or lack of education (Del Rosso, 1992). Nevertheless, many policy-makers often assume that the reduction of poverty will automatically translate into improved health and nutritional status for the population at large. Based on this assumption, improved health is considered to be a beneficial outcome, rather than a primary focus, of development. On the other hand, many experts involved in development and health programs now realize that waiting for the trickle-down effects of economic growth before investing in social welfare services can be devastating. Not only will a great portion of the people of the developing world suffer in the meantime, but efficiency, productivity and positive future outcome will be sacrificed as it is impossible for an ill and malnourished population to live and produce at an optimum level.

Nutrition Problems in the Developing World

Although malnutrition can be defined simply as a condition that results from a diet that fails to meet all of an individual's nutritional needs, the many types and outcomes of

malnutrition can vary greatly. Malnutrition can result from a deficiency or an excess of calories, protein or other essential nutrients. Nutrients can be defined as "substances obtained from food and used in the body to provide energy and structural materials and to regulate growth, maintenance, and repair of the body's tissues" (Whitney and Rolfes, 1996, 4). The outcome of an imbalance in calories, protein or nutrients can range from rickets due to the lack of vitamin D to night blindness due to a dietary deficiency in zinc. Obesity is a form of malnutrition with a higher incidence in the developed world than in the developing world. In fact, obesity is so prevalent in the United States that up to 25% of all children are struggling with the problem (Rolfes and DeBruyne, 1990).

Nutritional problems in the developing world tend to be significantly different than those found in the industrialized world. The most prevalent form of malnutrition in developing countries is protein-energy malnutrition or PEM. This syndrome was formerly referred to a protein-calorie malnutrition or PCM (Caliendo, 1979; Aina, Etta, and Zeitlin, 1992). PEM results from diets that are lacking in both protein and calories, or energy food. Protein is an important structural and working substance that is present in all cells and is vital to growth, repair, and replacement of tissues. Proteins can be considered "building blocks" of the body and can be found in the highest quantity and quality in meats, dairy products, eggs, legumes, and in many grains and vegetables (Whitney and Rolfes, 1996). Because it is a critical nutrient needed in growth, it is of particular importance in infancy and childhood. Unfortunately, the younger years, especially in the developing world, are often the years in which children are most likely to be deficient in protein. Most nutritionists and medical specialists agree that lack of protein and calories during critical phases of development can cause long-lasting damage (Nestel et al., 1992).

Protein-energy malnutrition and other forms of malnutrition are not always easily recognized, partly because the symptoms can be so similar to those of other diseases. It can be particularly difficult to diagnosis in a population as a whole. In the past a population would have been deemed undernourished based on child mortality statistics, growth retardation in children, poverty levels, and the prevalence of severe symptoms of malnutrition including diarrheal diseases. Estimated dietary intake and type of diet would be considered. It is generally accepted, for instance, that limited and unvaried diets, especially those based primarily on roots, tubers, and cereals, are less nutritious than other more diverse diets. More recently, functional performance indicators, such as reproductive and lactative performance indicators, have also been taken into consideration when analyzing groups of people for undernourishment (Viteri, 1982).

The root causes of malnutrition are also often hard to determine. In milder forms of PEM, for example, it is often difficult to distinguish between cases in which a person is suffering from a poor intake of protein or calories, or both (Wardlaw and Insel, 1990). In fact, the inadequate intake of protein and calories and the symptoms related to the inadequacy of both can be so intimately connected that controversy has historically surrounded the causes and effects of PEM. However, it is now generally agreed that PEM includes a variety of syndromes that can cause both mental and physical growth problems in children and is caused by the "synergistic" effects of insufficient diet and the presence of disease and infection (Newman, 1995). As these deficiencies become more severe, PEM can result in clinical marasmus and kwashiorkor, syndromes that are 10 to 20 times more common in developing countries than in the United States (Wardlaw and Insel, 1990).

The term kwashiorkor comes from the Ghanaian word that means "the disease that the first child gets when the new child comes" (Wardlaw and Insel, 1990, 178). This is a common scenario in the developing world as children are often weaned too early to make way for a new pregnancy in the mother (Jelliffe and Jelliffe, 1989). In countries where protein is scarce and precious, breast-feeding is recommended for up to two years; however, many mothers wean their children well before this time. This can be not only physically detrimental to the child, but also deadly. The replacement foods, usually thinned-down versions of starchy adult foods, are nutritionally inferior to breast-milk and frequently contaminated (Huffman and Martin, 1994). Kwashiorkor, also called wet malnutrition, is the often the result of this early weaning and subsequent starchy diet in children. Symptoms of kwashiorkor can be swollen feet, legs, hands, and faces and hair that turns reddish and thin (Aina, Etta, and Zeitlin, 1992). In addition, the child often becomes apathetic, listless, withdrawn, and may fail to grow physically and mentally. Studies have shown a severe impairment and a reduction in the number of cells in the brain of malnourished children (Rolfes and DeBruyne, 1990). Related to these symptoms is the increased susceptibility to diseases such as tuberculosis and malaria.

Clinical marasmus, often called dry malnutrition, can be another outcome of a deficient diet. It occurs when an individual simply does not eat enough and caloric, nutrient and protein intake levels are all low (Newman, 1995). Literally meaning, "to waste away," children with marasmus display abnormal thinness. In many with severe marasmus, there is little or no subcutaneous fat. Faces of children with marasmus often become very wrinkled, giving them the appearance of the very old. Results of this syndrome can be similar to those of kwashiorkor: the stunting of both physical and mental

development. Because the brain grows at its most rapid rate during the first year of life when marasmus is very common due to early weaning, children with this disease often never fully recover (Wardlaw and Insel, 1990).

Many have noted that the line between kwashiorkor and marasmus is often fine, resulting in the common diagnosis of marasmic kwashiorkor (Torun and Chew, 1994; Whitney and Rolfes, 1996). Cases of each have been found in the same area at the same time, even in the same children. This led to the claim that these are simply different end results of the same type of protein-calorie deficiencies (Newman, 1995). Despite terminology disputes regarding PEM, several things are known about both syndromes. First of all, there is a definite cyclical relationship between PEM and disease. Disease puts great nutritional demands on the body and can cause lack of appetite or diarrhea which in turn may cause malnutrition. In many developing countries relatively basic health problems can lead to serious consequences because of lack of understanding as to how to treat these problems. Diarrhea, for example, a common aspect of malnutrition, can be deadly in children because mothers often reduce liquids instead of administering rehydration formulas. Secondly, as mentioned above, PEM can have both short-term and long-term effects. The more immediate effects of lethargy and shortened attention spans, for both children and adults, can restrict an individual's daily activities and duties. This ultimately impacts not only the malnourished individual, but the family and community as well.

Nutrition as a Bio-Cultural Issue

A "minor revolution" has occurred in the last decade or so in the field of nutrition. For much of the history of nutrition research, the focus of the science has been primarily

on the biological or economic aspects of food consumption patterns and nutrient intake. These elements are still basic to many studies; however, the behavioral aspects of nutrition and the potential for disease prevention and risk reduction through dietary change have recently gained a position of greater importance (Jelliffe and Jelliffe, 1989; Bowen and Tinker, 1995). Public recognition for the need to expand the base of nutritional thought came in part in 1940 in the United States with the founding of the Committee on Food Habits within the National Research Council and its emphasis on socio-cultural aspects of nutrition. Mead (1964) and Berg (1973) were among the early researchers who discussed the importance of understanding the factors which form the foundation of food habits, as well as intra-household food distribution.

Since the 1950s not only has nutrition research changed, but the ways in which research is applied to hunger and malnutrition problems has changed as well. Payne (1985) asserts that in the 1960s a typical nutrition program in the developing world would have focused mainly on mobilizing financial and human resources in order to implement very specific nutrition interventions. Little consideration would have been given, he claims, to the evaluation of the validity or effectiveness of the programs. If the expected results were not achieved, then more resources would have been poured into the program without further analysis of the validity of the program itself. These interventions were typically geared toward the overall production of more food, the reduction of deficiencies of particular nutrients, and the provision of more education. Related problems, such as the presence of infectious disease, would have been dealt with in separate programs. The evolution of thought since that time has brought about a greater understanding of malnutrition as a syndrome with multiple causes. There has since the 1960s been a

concerted effort to provide integrated, multisectoral nutrition interventions that are implemented at the village level (Johnston, 1982). In addition, it is now widely accepted that malnutrition is often difficult to diagnose and quantify because the body can easily adapt to a wide range of dietary situations (Jelliffe and Jelliffe, 1989). Programs, therefore, are generally no longer as narrowly focused nor heavily reliant on short-term fixes or "quick" solutions. Special programs, for instance, that centered on the delivery of special foods for small children have been shown in most cases to be neither effective or cost-efficient (Payne, 1985).

During the evolution of nutrition research and inquiry over the past few decades, several critical topics have arisen that include elements of the social, economic, political, and cultural processes of society. These are of special concern in the field of the social sciences; however, researchers from a variety of fields are coming to recognize the consequence of interdisciplinary cooperation in nutrition and health inquiry (Curtis and Taket, 1996). Malnutrition can have a variety of causes such as ignorance, social problems, biological factors and environmental factors (Torun and Chew, 1994). Therefore, while food availability issues tend to fall within the spectrum of the political scientist, economist, and agricultural specialist, food acceptability issues span a number of social sciences with emphasis on cultural issues. In other words, it is a reflection as well as a shaper of culture. Although the range and scope of these topics are immense, the following section surveys a few of the most critical issues concerning culture, food and nutrition.

Cultural Constraints to Improved Health and Nutrition in the Developing World

As discussed above, malnutrition and hunger stemming from food acceptability problems represent the confluence of many complex cultural, social, and biological issues. Cravioto and DeLicardie (1980, 101) stress the significance of culture in nutrition and food studies: "The understanding of malnutrition in man thus requires an ecologic framework of reference in which the social, psychological, and cultural aspects of human behavior are appropriately related to the biologic nature of man and to the physical environment in which he lives. Nutrition is above all an important focus on organized human behavior."

Gender Issues in Health and Nutrition

Gender, and its effect on health and nutrition in the developing world, has received much attention in recent literature (World Bank, 1994a; Paolisso and Leslie, 1995). Many studies now concentrate solely on women and children since infant and maternal mortality rates, as well as life expectancy, are considered to be reliable indicators of overall public health (Hertz, Hebert, and Landon, 1994). There is growing recognition of the importance of women in production, reproduction, and the overall health and well-being of the family as a unit and as individuals. Despite women's crucial roles in economic and social arenas, however, women in most developing countries are more likely to work harder, yet be more impoverished and less healthy than their male counterparts (FAO, 1985; Lele, 1991; Paolisso and Leslie, 1995). In Africa, over half of the rural poor households are women-headed and the children of these families make up the largest majority of the poor population (Lele, 1991). Women-headed households can be lead by single, widowed or divorced women or by women whose husbands have temporarily or

permanently moved to other locations. Especially in Africa, households are often considered to be female-headed if the marriage relationship is polygamous and the father has only limited daily involvement in family affairs. Whether a household is male- or female-headed, however, food is increasingly being viewed as a link between household economics and individual health and its consumption is often considered a basic measure of household well-being (Huss-Ashmore and Curry, 1991).

In spite of women's responsibilities in the developing world, especially within the household, females are often without control in critical decision-making processes in the home due to cultural and social constraints. Women's lack of access to and use of household funds for improving the nutrition of the children within the family is common and can be highly detrimental to the overall health of the family (Biswas and Pinstrup-Anderson, 1985). In many households in the developing world, particularly in Africa, the man earns and controls the wage income of the family. A study in Africa found that women often have no access to their husband's money and regularly do not know how much money the husband earns (Elabor-Idemudia, 1991). In many developing countries, including parts of Africa and Asia, a man's earnings are not a good indicator of health or nutrition of the family because the allocation of the food and money is often uneven within the household (Sethi, Mehta, and Grover, 1992). Research such as that done by Dettwyler (1992) in Mali explore the many causes and outcomes of this phenomenon through case studies. Others have expanded this theme by examining exactly how male and female incomes tend to be used within a household. Paolisso and Leslie (1995) found that extra income provided by women in developing countries may be used for meeting

additional food needs that increase the nutritional status of the family, but are less often used for health-care services.

Numerous other factors related to gender impact the health and nutritional status of families in the developing world. Women farmers in Africa, for instance, do approximately 75% of the work to produce the food consumed, they process 90% of the food, do 90% of the hoeing and weeding, and 60% of the harvesting and marketing (Lele, 1991). However, much of this work tends to be "invisible" or lies outside the formal economy and so is often ignored in development policies. Studies have shown that this "invisible" work takes up to 19 hours a day for the average woman in Nigeria (Elabor-Idemudia, 1991). In developing countries, "energetic input" is driven by the food system and in order for the society to function efficiently, the energy output (like agricultural work) should be higher than the energy input (food) (Giampietro and Pimentel, 1992). Nevertheless, in much of the developing world females not only receive less food than the males of the household, but have an absolute food deficit based on their energy expenditure (Sethi, Mehta, and Grover, 1992). Not only does this compromise a woman's physical condition, which is commonly stressed by her reproductive role already, but it can affect the nutritional status of the entire household. Women in Zaire, for example, will reduce the time spent in food preparation during peak times of labor demand (Scheopf and Engundu, 1991).

Structural adjustment programs also affect women's abilities to carry out household duties and provide good nutrition and medical care for their families. Food prices often rise in response to the devaluation of currency, for example, Since the provision of food, health care, and school fees are usually a woman's responsibility in

Africa, the lowering of real wages particularly affects women (Clark and Manuh, 1991). They are sometimes forced to bridge the financial gap, caused in part by the outmigration of male labor, by working longer hours or by finding additional employment (Spring and Wilde, 1991). These time constraints reduce the quality and quantity of time spent in child-care activities. As a Nigerian woman responded when asked about why she did not notice obvious signs of malnutrition in her child, she replied, "Who has time to notice these things when you are up before the sun working and collapse in bed only after it is too dark to work any longer?" (Nigerian fieldwork, 1996).

The Effects of Parental Care on Health and Nutrition in the Developing World

In close relationship to the issues of gender is that of parental care. Parental care refers to the overall quality of nurturing given to children by both mothers and fathers and can include the time and attention given to a child, the provision of sanitary living conditions, and the provision of adequate medical care. Studies have shown the enormous impact of parental care on survival rates of children, particularly between birth and the age of four. Much of the disparity lies in the resource allocation between members of the family. Food and health care allocation, for example, are now accepted as proximate determinants of differential child mortality (Moseley and Chen, 1984). However, simple child neglect, which is much more difficult to quantify and observe, is often at the root of child mortality and poor health as well (Larme, 1996).

Disparity in parental care has often been linked to the priority given to care of males as opposed to females; however, although excess female mortality is found in North Africa, the Middle East and South Asia, it has been shown to be virtually absent in sub-Saharan Africa (Caldwell, 1993; Svedberg, 1990; Stanton, 1994). Although regional

parental care traits such as this do exist, many researchers are now giving more attention to intra-household trends, especially in food habits, rather to trends among regional or ethnic groups. Households that are similar in composition and environment often display distinctive patterns in acquiring and distributing food which can result in major intra-household variations in food consumption that can impact the nutritional status of children (Thomas and Earl, 1994).

Maternal care is of the utmost importance in survival and successful growth of children, especially in the developing world where resources are often lacking. In both developed and developing countries, maternal care will vary greatly, even within a single community. Both cultural and physical realities play a part in maternal care. While cultural norms and practices may encourage a relatively low level of care in some areas, the harshness of the economic and physical environment also plays an crucial role in maternal care in Africa. Many times proper care is not provided to children due to maternal illness or malnutrition. In addition, maternal malnutrition before and during pregnancy is a considerable cause of low birth-weight and fetal growth retardation (Fosu and Subedi, 1996). Parents who are ill or malnourished are likely to be unable to give the necessary care to their children who require time, energy, and rationed resources (Dettwyler, 1992). Furthermore, parental illness can cause economic hardship which Green (1991, 747) calls "illness-triggered pauperization."

The lasting effects of poor nutritional status and inadequate parental care on future generations has been noted by researchers (Cravioto and DeLicardie, 1980). Problems in parental care can actually be triggered by malnutrition in that a malnourished child is often less responsive to stimulation and prone to general apathy. This behavior can cause the

parent to be less responsive and even place a lower value on the ill child. Studies have shown that mothers may "give up" on or neglect a severely malnourished child (Scheper-Hughes, 1987). In other words, apathy can create apathy and ultimately reduce child-parent interaction. If this occurs during a crucial knowledge-gathering point in a child's life, he or she will be at greater risk for being caught in a poor socio-economic environment as adult and more likely to choose a mate with similar characteristics. In addition, it is more likely that the malnourished, poorly-cared-for child will as an adult create a similar environment and a new generation of malnourished children (Cravioto and DeLicardie, 1980)

Breast-Feeding and Child Health and Nutrition in the Developing World

Breast-milk has been described as the "most biologically adapted, consumer-tested home food for infants" and has been shown to be able to provide up to 75% of a child's protein needs up to a year old (Tobias and Thompson, 1980, 92). In addition, it is the most economically-wise way in which to feed a baby, especially in the developing world where formula commonly consumes 30% or more of a family's income (Tobias and Thompson, 1980). However, in recent years there has been a general decline in breast-feeding in both the developed and developing world.

Few trends have so illuminated the connection between child nutrition, feeding practices, media-influence, and culture in the developing world as have the declining rates of breast-feeding. The problem first received international recognition in the 1960s and 1970s as breast-feeding rates declined in both the developed and developing world due to intense infant formula campaigns being waged. Advertising methods and marketing strategies were harshly criticized because they portrayed bottle-feeding as glamorous and

modern. This was particularly dangerous in developing countries where many women sought to purchase and use products considered to be Western and modern. The problem grew so severe that in 1981 the World Health Organization adopted the International Code of Marketing of Breastmilk Substitutes in a vote of 114 to one. (The United States cast the only dissenting vote.) Today the formula companies in general comply with the regulations of this code, but many are still practicing less overt forms of marketing such as supplying formula samples to maternity hospitals in the developing world (Robbins, 1992). These "samples" provide a strong incentive for using formula because once breast-milk is supplemented or replaced, even for a few days, many mothers are unwilling or unable to resume breast-feeding (UNICEF, 1993). In addition, studies have shown that although infant formula advertising has completely ceased in some developing countries, many women--up to 80% in some countries--can recall specific formula advertisements and brand names (Winikoff and Laukaran, 1989).

The reduction in and shorter duration of breast-feeding, especially in the developing world, heralds many serious health and nutritional risks for infants. First of all, limited funds are funneled toward formula instead of toward basic food needs for the entire family. A mother's nutritional status, as well as that of other children, is often compromised when food supplies are necessarily reduced to buy formula. An entire family may suffer nutritionally when an infant is bottle-fed rather than breast-fed. Secondly, the risk of death from diarrhea in infants in the developing world is 25 times higher in bottle-fed babies as opposed to breast-fed babies (Robbins, 1992, 129). In the 1970s, for example, Brazil had one of the lowest rates of breast-feeding in the developing world. However, due to a massive nationwide breast-feeding campaign, the rate of breast-feeding

has increased dramatically and the number of infant deaths due to diarrhea has been reduced by 46%. Nevertheless, 1.5 million babies worldwide die each year of "Bottle Baby Disease" or diarrhea caused by contaminated bottle-feeding (Robbins, 1992, 134). Lastly, earlier weaning and higher rates of early supplementation can decrease birth intervals. Because exclusive breast-feeding can act as a form of birth-control, declining rates of breast-feeding have impacted child spacing in countries where population rates are high (Winikoff and Laukaran, 1989).

In an attempt to reverse recent negative breast-feeding trends, many governments, social organizations, and non-governmental organizations are devoting more time to teaching women--and men--the value of extended breast-feeding and the importance of sanitary and protein-rich weaning foods. Even in countries in which the rate of malnutrition is high among adults as well as children, breast-feeding is most commonly the best option. Almost all women can successfully breast-feed, if given the appropriate advice and encouragement, even if they are themselves malnourished. Nevertheless, there are numerous social and cultural obstacles to overcome in reinstating breast-feeding as a cultural norm (Igbedioh and Aderiye, 1992). For example, despite heavy breast-feeding campaigns in Nigeria, only 1% of Nigerian women breast-feed exclusively in the first six months of a child's life (Huffman and Martin, 1994, 134). In Sudan where food shortages have occurred regularly in the past decade, one study found that only 30% of women in the northern section of the country breast-fed (Nestel et al., 1992). Early weaning presents a problem in many countries as well because very few nutritionally adequate substitutes for breast-milk are available. Studies in Africa have shown, however, that economically difficult times may encourage mothers to breast-feed initially and prolong

breast-feeding for a greater period of time than they normally would (Igbedioh and Aderiye, 1992).

Food Taboos and Traditions in the Developing World

Another area in which culture influences nutrition and health in the developing world is that of food taboos and traditions. Food universally represents an important factor in society, community, religion and family and food avoidances or restrictions, present to some degree in all societies, have long been a subject of great interest in the social sciences. While some are seen to be evolutionary adaptive practices that protect the population or environment, others appear to be "maladaptive" in that they appear to cause nutritional deprivation (Giampietro and Pimentel, 1992; Aunger, 1994). For example, food restrictions are placed on high-protein foods, such as meat, in some religions such as Judaism and Islam, as well as in many traditional religions in Africa (Grigg, 1995). Despite their cultural and religious importance, these food taboos or restrictions, especially those pertaining to children, can contribute to nutritional deficiencies in the developing world (Hughes and Hunter, 1970). They can also be the most difficult cultural feature to influence or change (Fieldhouse, 1995).

Many food restrictions are placed specifically on pregnant women and on children, the most nutritionally vulnerable sectors of society. Studies conducted in numerous developing countries, for example, indicate that females often have nutrition problems during pregnancy or lactation because of marginal food intake based on socio-cultural beliefs such as food restrictions (Pelto, 1987). Nutrition intervention is sometimes aimed at displacing these traditions, while others are aimed at simply compensating for them through alternative food choices. Consumption of high-protein legumes, for example, is

often promoted in countries such as India where religious restrictions are placed on eating meats (Salunkhe and Kadam, 1989).

Family Planning and Child Spacing in the Developing World

Rapid population growth contributes to the critical gap in basic health services, particularly in areas where per capita incomes are stagnant or dwindling. Many areas in the developing world, including Africa, have not yet reached demographic transition and still have high population growth and high fertility rates. In 1992 the total fertility rate for developing countries overall was 3.6, but was 6.5 in Africa (World Bank, 1994b, 20).

The impact of this population growth is clearly evident. First of all, greater populations mean more people to feed with each year. The developing world as a whole become net food importers for the first time in the mid-1980s, foreshadowing ever-worsening food shortages (Macgregor, 1990). Many researchers and scientists are now suggesting that increased food production is not primary way in which the world should face its "carrying capacity" problem, but rather by limiting population growth. Brown (1994) argues that even if the earth can "sustain" the additional 90 million people added to the population each year, living standards and per capita consumption will necessarily have to decrease. Brown and others urge governments and NGOs to give family planning top priority. Presently, there are an estimated 100 million women in the developing world who want to limit the number of children that they have, but do not have the resources to do it (Brown, 1994, 194). In the developing world as a whole, only one-half of the population reports using any form of contraception (World Bank, 1994b). In many cases, birth control is simply cost-prohibitive because countries are unable to reasonably produce their own contraceptives and purchase expensive imports (Bamgboye and Ladipo, 1992).

The "marketing" of birth control and "child spacing" is becoming more common in the developing world, especially in Africa where fertility rates are not declining despite increasing economic and environmental pressures. The goal of these programs is not simply to reduce the number of children, but to protect women's health which can be severely compromised by pregnancy, childbirth, and child-care duties (Paolisso and Leslie, 1995). Despite the potentially devastating effects of increased fertility, large families continue to be desired in many countries. Although it seems contraindicated to have a large family during economically stressful times, many couples feel that the addition of children provides much-needed agricultural labor for the future (Lele, 1991). Moreover, social and cultural norms dictate family-size in many areas of the developing world. This may particularly be the case in areas where polygamous relationships are common and women are forced to "compete" with other wives. Nevertheless, even when wives are prepared to limit family size, many husbands will not agree to use birth control. This may be because large families represent higher social status or because obtaining birth control may be too embarrassing or financially prohibitive. In order to combat gender-related problems, some clinics in Africa now require the women to bring husbands with them in order to receive family planning services although many of the husbands are unwilling to attend (Bamgboye and Ladipo, 1992). So powerful is a man's influence in some parts of Africa, Bankole (1995) claims, that any research done or program designed solely on the attitudes and actions of women in fertility matters will be doomed to failure. It has been argued that many programs still have not taken into account the economic, cultural, and social realities impacting African women as it relates to their power over their own reproductive health (Fosu and Subedi, 1996). In order to overcome these and other

problems in population control in the developing world, it will take a broad-based public commitment to conduct research and to provide information and the necessary resources to couples.

The Influence of Education on Health and Nutrition in the Developing World

There has been much research concerning the degree of importance of education on health and nutrition in the developing world. Within the recent body of literature, it is generally accepted that maternal education will impact a family's health more often than will paternal education. So critical is a woman's education in the developing world that some have argued that it has contributed more to decrease in mortality than has the provision of health services (Sandiford et al., 1995). Worldwide studies have shown correlation between maternal education and children's health status even when household income and health-care availability are held constant (Caldwell, 1993). Stanton (1994, 1376) notes that "The association between female education and child survival has been one of the most robust findings across continents, nations, ethnic groups and socio-economic groups."

There are several possible reasons why a woman's education might so impact a family's health and nutritional status. First of all, education frequently provides basic information about health and nutrition. However, studies show that a more important outcome of female education is likely the acquiring of the skills necessary to interpret health-relevant information that is available outside of formal schooling (Sandiford et al., 1995). The ability to read, for example, opens many avenues for health information for both men and women. Education can provide an opportunity for women to "assess and access health resources" that are available (Stanton, 1994, 1378). Secondly, female

education may provide a real and perceived power for women both within and outside of the household. Because women in the developing world are often subjugated to the men and older family members in a family, education can be a type of empowerment, giving women a higher position or status within the family. Women who are more educated may be more willing to break tradition or become less 'fatalistic' in their attitude toward illness and malnutrition (Caldwell, 1979; Flegg, 1982). Last of all, women's earning potential can be greatly enhanced by education. Since a woman's income is more likely to go toward the provision of basic foods and health services than is a man's, greater wage-earning can translate into better health for the entire family (Lele, 1991). Unfortunately, in Africa female children are often required to leave school to help at home or even to take the place of the mother (Spring and Wilde, 1991).

Newly Emerging Issues in Health and Health Care in the Developing World

Webster's dictionary (1994) defines health as "soundness of body or mind" and "freedom from disease or ailment." This definition, while undisputedly correct, is nevertheless incomplete, according to the World Health Organization and others in the health care field. For many decades health has been viewed as simply the absence of illness, detectable physical handicap or physical problem. While this is part of good health, it is now recognized that "true" health has many different facets. A person may in fact be free from disease, but unable to carry out his or her work, home obligations, or recreational desires because of inadequate rest, poor nutrition or unhealthy sanitary conditions. The newly created definition of health by the World Health Organization reflects these nuances. WHO defines health as "a state of complete physical, social and mental well-being and not merely the absence of disease and infirmities" (Kearns, 1993,

142). While many people in the developed world may have an appreciation of how non-physical factors can affect health, the traditional societies in the developing world are more likely to accept the intrinsic link between health and the social, natural, and supernatural. Health is often viewed in these more traditional societies holistically instead of in small, isolated parts. It is experiential and total; a "way of being" (Alubo, 1985, 329).

Determinants of Good Health in the Developing World

It is ironic, therefore, that most researchers and health-care administrators and personnel now accept the links between the social, cultural and behavioral factors and good health in the developed world, but have long resisted this line of thinking in the developing world (Fosu and Subedi, 1996). For example, the "new public health" initiatives in the developed world have put more emphasis on behavioral and social problems associated with drinking, smoking, eating and exercise. On the contrary, the majority of health-care research in the developing world has continually emphasized the input of medical services and national per capita incomes instead of on the less quantifiable social, behavioral and cultural influences on health. However, comparative studies, now more easily carried out in developing countries because of the widening data base provided by international agencies, have shown that higher per capita incomes and greater financial investment in the health system does not always translate into better health for the populations of the developing countries (Curtis and Taket, 1996). Recently the term "health transition" has been used to represent the new direction of health care in the developing world. This term is used to mean the social, behavioral, and cultural determinants of health as opposed to medical intervention and income levels. It is used to imply that the focus on health care has moved away from emphasis on simply preventing

death and more toward emphasis on overall good health and quality lifestyle. It purports the theory that behavior and lifestyle "play a major role in determining health" (Caldwell, 1993, 125). While the term health transition is not new, having been used as far back as twenty years, its placement at the heart of health-care research in the developing world is a recent phenomenon.

There is a plethora of data supporting this new direction in health care research. For example, in 1990 the countries of Sri Lanka, China and Vietnam had life expectancies ranging from 66 to 71 years although their per capita incomes only ranged from 330 to 420 U.S. dollars. Saudi Arabia, Libya, Oman, and Iraq, on the other hand, had per capita incomes from \$2500 to \$5000 but had life expectancies ranging from 61 to 64. This could easily be explained if the latter countries invested significantly less per person for health care; however, Sri Lanka spent an average of \$7 per person per year and had only one doctor per 5520 persons, while Iraq spent an average of \$123 and had one doctor per 1740 persons years (World Bank, 1993). A Rockefeller Foundation report, *Good Health at Low Cost*, investigated the health programs and philosophies of these low income countries in order to discover the secrets to their successes. They found that "social" and/or "political will" were the basis of their success. Their countries placed great emphasis on broad and accessible health programs, education, especially of women, community involvement, and adequate nutrition. Further analysis by Caldwell (1993) shows that in eleven countries with unusually good health statistics for low per capita income, there was a strong correlation between health success and the level of education of women of childbearing age, the practice of family planning, and the education of men.

A less strong correlation was found between health success and the density of doctors and nutritional levels. A weak correlation was found with per capita income.

What causes these countries to place this emphasis on these particular initiatives?

Caldwell (1993) suggests that countries that have an "egalitarian-radical-democratic" tradition or history that has encouraged the education of women and the demand for modern health and family planning services. Nevertheless, these countries did not show health improvements until modern health services were actually available, so higher education levels alone will not suffice. Also, these countries do not have the most technologically advanced services available, but they tend to be more equitably distributed and more readily available to both urban and rural populations and the services were free or inexpensive. In addition, health programs were found to be most effective in societies where equality was expected and grass-roots movements were more demanding that health providers maintain good services. This is connected to greater levels of education for women in that more highly educated women tend to demand better and faster treatment for their families (Trager and Osinulu, 1991).

The State of Health Care in the Developing World

Health care is an issue of growing importance in both the developed and developing worlds. In the developed work, it is a big "business" that is rapidly expanding. According to the World Bank, 10% of all health spending is done in the developing world, despite the fact that 78% of the world's population lives in the developing world. The average person in the developing world has \$41 dollars spent on their health care every year (World Bank, 1993). Lack of funding, however, is only part of the health-care problem in the developing world. Availability and accessibility are also major challenges

to health care. Availability refers merely to the presence or absence of health-care services while accessibility refers to an individual's ability to reach and utilize health facilities.

Accessibility of health care can be dependent on location, income, race, gender, and age as well as on a host of other variables (Scarpaci and Irarrazaval, 1996).

In recent decades all the developing regions have battled the problem of providing primary health care for their populations. Of the three major developing regions of Latin America, Asia, and Africa, the former seems to be rising most effectively to the challenge. Latin America, for example, is showing the greatest amount of improvement in overall health and social indicators. Latin Americans live longer and are more literate than their counterparts in Africa and Asia (Scarpaci and Irarrazaval, 1996). The ratio of doctor per patient is on average less than 2000 to 1 in Latin America while the average is approximately 10,000 to 1 in Africa (Roemer, 1993). In addition, infant mortality has dropped by more than half in the high-, middle-, and low-income groups within Latin America over the last two decades. While 13 of the 15 countries with the highest under five mortality rates are found in sub-Saharan Africa, Latin America has the lowest overall rate in the developing world (Kloos, 1994). Investment and commitment to health care by the national governments appears to be higher than in other developing regions with some countries, such as Costa Rica and Cuba, providing comprehensive health care for all their population (Scarpaci and Irarrazaval, 1996). Mexico committed itself to improving the health of its people beginning in 1917 and although it is still battling its share of economic and social problems, it has seen a rise in life expectancy and a fall in infant mortality since the 1960s (Stebbins, 1993). Furthermore, the nutritional status of the people in Latin America is generally much higher than that in Africa, with severe malnutrition much less

prevalent. While not all of the population is much better off economically than the population of Africa, Latin American governments have managed to create fairly efficient systems of primary health care.

As in all regions of the world, health care is not evenly or equitably distributed within or between the Latin American countries (Stebbins, 1993). The cholera epidemic of the early 1990s, for instance, illustrated how vulnerable these countries still are to diseases, even those that were believed to have been eradicated. Some countries like Chile, however, weathered the epidemic better than other Latin American countries, showing the disparity between countries. Moreover, even within countries, major inequities exist. As in Africa, the rural areas tend have less access to health care than do the urban areas. Also, the portion of the population with higher incomes, as in the rest of the world, tend to receive better health care. On the other hand, urban areas in Latin America are particularly plagued by poor sanitation and living conditions which both breed disease. Approximately 21% of all persons living in urban areas in Latin America have no access to drinking water systems and almost 51% are not connected to a sewer system (Curto de Casas, 1994, 235). While obvious shortcomings do exist in the system, Latin America has made great strides in improving the delivery and provision of health care to its people with many countries even providing universal health care coverage (Scarpaci and Irrazaval, 1996). Furthermore, in the 1980s the health care model in almost Latin American countries changed giving more emphasis to individual action and local health systems with community participation. These recent changes indicate a willingness of government and non-government agencies to expand the system and allow for greater coverage of basic health care in both rural and urban areas (Curto de Casas, 1994).

Africa, on the other hand, has a much more sobering health-care report. Most countries in Africa show very severe health indicators and appear to have deep inequalities in the distribution of services (Iyun, 1994). Infant and maternal mortality are still alarmingly high. In one African country, for instance, 2 out of every 1000 mothers will die giving birth. Infant mortality is as high as 15-20% in some countries. Average life expectancy is 51 years as opposed to over 60 years for the rest of the developing world as a whole. The population growth rate is continuing to soar as are fertility rates in many countries. Curable diseases such as malaria kill thousands every year. In addition, malnutrition is still prevalent with over 40% of the children in some countries mildly to severely malnourished (World Bank, 1993).

Based on these statistics alone, it is quite clear that a major disparity exists between the health-care policies and systems in Latin America to those in sub-Saharan Africa. Three main reasons, among many, may be responsible for this incongruity. One of the main reasons for this gap is based on history. Latin America, for example, was able to shove off the yolk of colonialism much earlier than was Africa, giving the region more time and experience in developing and implementing appropriate health-care systems. The African health care system, on the other hand, was originally designed to provide care for European administrators, workers and merchants, not for the indigenous people (Iyun, 1994). Furthermore, Latin America has an apparent advantage over Africa in the area of education. While the quantity of education has increased in both regions over the past few decades, Latin America has been able to reach higher literacy rates, for example. The quality of public education remains in question on both continents, but Africa seems to be falling behind. This is critical to health care in that education, especially of females, has

been linked to improved health status and improved health-care seeking abilities. Last of all, Latin America has better been able to control population growth. Many successful contraception and child-spacing campaigns have been waged in Latin America with the result being a slowed population growth.

While improvements have been made in Latin America and in other parts of the developing world in health-care provision, much work remains to be done. Latin America is still plagued by poverty and social stratification problems that translate into poor health for much of the impoverished and rural populations (Stebbins, 1993). Over 130 million people in the region have no access to health care at all and it is estimated that as much as 30% of the health-care budget is wasted (Scarpaci and Irarrazaval, 1996, 188). However, successes in one part of the developing world can serve as a teacher for other regions that are faltering, such as Africa. The question that must be asked is: What changes can be made that are maintainable and affordable? The following sections briefly examine the health-care problems in Africa and the potential improvements that can be made by governments, international organizations, and grass-roots movements in coming years.

"Enabling Environments" and National Governments in Health-Care Delivery

Many non-governmental organizations have recently stressed the importance of government's role in providing an "enabling environment" for improved health and nutrition. The environment in which a health system develops heavily impacts its ability to grow and evolve. Not only should the environment not be "hostile," it should be supportive. Environmental hostility appears to have an inverse relationship with health-care system sustainability (LaFond, 1995). An enabling or supportive environment includes a range of services such as providing solid and well-maintained infrastructure,

providing funds and man-power for health services, and controlling the political and physical environments as much as is possible. According to the World Bank (1994b), for example, a government's main function in health care should be providing public goods, which are those things that benefit a community as a whole and cannot be denied to any one individual. Examples of this would be the provision of adequate drinking water, sewer or road systems. Moreover, a government should ideally be able to provide adequate and accurate data concerning the population's health status and evaluations of the existing health-care programs. If governments will commit themselves to these elements of the "enabling environment" then often other organizations will be able to address the more specific health needs of the population. The government's job should be to manage the projects, such as road construction, that cannot be undertaken by other groups.

A serious problem within the developing world, however, is the lack of maintenance to already existing infrastructure and programs. Initial investment and building of infrastructure are often difficult because of limited finances and resources, rugged terrain and sparsely settled areas, but continued upkeep can be equally difficult. A continuing problem in Africa has been the inordinate amount of money spent on tertiary care facilities as opposed to smaller, less expensive primary care facilities such as village dispensaries. Not only is the initial outlay for a tertiary care facility much higher, but it is much more difficult to staff with properly trained personnel and much more difficult to physically maintain. In fact, studies show that up to 40% of the health-care facilities in Africa are presently in poor or unsatisfactory condition. Problems with equipment can be perplexing as well, especially in the medical field where much of the equipment is often

sensitive to environment and requires constant upkeep by skilled technicians. Despite these inevitable needs, in many hospitals in Africa only a fraction of the budget is designated for maintenance and repair (World Bank, 1994b, 99).

The International Community and Health Care in the Developing World

It is widely accepted that no individual or single group can be expected to change radically the health and nutritional status of any population within the developing world. The problems facing all health-care delivery systems are too massive and too complex. Even national governments, as discussed above, are only expected to meet a portion of their own population's health needs. Many claim that 'health for all' in the developing world, even in Africa, is possible with only moderate infusions of external funding from the industrialized world, but that it really comes down to "poverty, power, and politics." Although many health issues must be dealt with carefully, especially those connected with nutrition because they are more "politically and macroeconomically charged," the international community can play a critical role in the provision of basic health care (Green, 1991, 747). The goal of donors and governments alike should be health care program sustainability which can be defined as "the capacity of the health system to function over time with minimum external input" (LaFond, 1995, 17). Nevertheless, dependency on external funding for primary health-care initiatives in the developing world is continuing to rise (LaFond, 1995).

International involvement is certainly taking place as statistics show that in Africa less than 50% of the health budget is on average provided by the government itself. In the past four or five decades the international community has been a major source of funds and service in health care in the developing world. In 1990 \$4.8 billion was donated to

developing world health care (Saxenian, 1995). This international participation in health care in Africa is not a new phenomenon and stems in large part from mission work. Long before the colonial powers addressed the health-care problems in Africa, Protestant and Catholic missions were providing much health care and medicines to the African population. Some of the earliest hospital missions date back to the 1500 and 1600s. Today they still account for 25-50% of the available health services in most countries in Africa (Good, 1991; Ityavyar, 1987).

There are positive and negative aspects of health-care involvement from Western governments, non-governmental organizations and churches from around the world. One of the more positive attributes of international participation is the supply of human and physical resources brought to the health-care system in Africa. Well-trained personnel and administrative specialists can be much needed as they are frequently in short supply in Africa. Although the World Bank (1994b) and others point out some of the pitfalls of using expatriate medical staff, important work and training are provided by non-national personnel. Furthermore, despite seeming cultural barriers, many NGO and church-based clinics are utilized more regularly because they are often better staffed and managed than government-run facilities. Part of the mission-based health care success has been reported to be the presence of more "qualified and courteous" personnel, in addition to the fact that it is often tailored to the vulnerable segments of society (Vogel and Stephens, 1989; Adetunji, 1992).

Critical medical resources as well as staff are also provided by international donors and organizations. Pharmaceuticals, for example, are often in short-supply in government-run health care facilities in Africa, but NGO and church-run clinics usually have a better

stock in quality and quantity because they have more access to foreign currency and are more likely to devote more of their budgets to drugs. Studies conducted in Africa have shown that drug availability, almost above all else, has a great impact on utilization (Vogel and Stephens, 1989). These resources and services are also likely to be free, subsidized, prorated or generally more affordable in mission clinics or programs.

Despite the obvious benefits to international cooperation in health-care, there are negative factors to be considered. For instance, when several organizations are attempting to provide health-care services to a country or community, goals and agendas can differ so widely that conflicts result. Public and private efforts need to be coordinated so that there is equitable distribution of health-care services (Umeh et al., 1986). If efforts are not closely coordinated, valuable time and money can be spent in overlapping services. Many have suggested that international organizations must use tailor-made packages in each country with consideration given to the cultural, social and economic situation as well as to what services are being provided by other groups (Saxenian, 1995). Furthermore, there has been a great deal of criticism of "vertical" packages offered by international organizations, especially those that deal with a single problem such as leprosy or malnutrition (World Bank, 1994b). Many international aid packages come in the form of "time-limited packages" that have been tailor-made for a single purpose (LaFond, 1995, 27). Critics stress that there should be an attempt to provide "linking" interventions where two or three problems are dealt with at once. This is much more effective and economically feasible than dealing with each problem independently (Saxenian, 1995).

Primary versus Secondary and Tertiary Care in the Developing World

Although the term "health care" is frequently used as if it refers to a single, well-defined type of medical intervention, it actually represents many different levels of care from primary to comprehensive. Primary care refers to diagnostic and therapeutic care provided by a doctor or nurse. Secondary care usually means general hospitalization. Tertiary care, on the other hand, generally refers to specialty hospitalization and treatment such as intensive-care and other specialized services. Comprehensive care refers to all three types of services (Scarpaci and Irarrazaval, 1996).

Much debate has centered around these varying levels of health care, especially in the health systems of the developing world. In 1977 the World Health Assembly advocated primary health care as the new basis for health-care systems in order to provide affordable, accessible and suitable health care to the people of the developing world (LaFond, 1995). In light of this it has been argued that the bulk of time, money and effort in any health care system should be spent on providing basic, preventative, primary care. Not only is it the most affordable type of intervention and the easiest to deliver and maintain, it alleviates the most human suffering by preventing illness instead of simply treating it. Estimates show that for approximately \$60 billion, or \$12 per person, the low-income countries of the world could provide basic health-care to all their people (Saxenian, 1995). It has been noted, however, that both indigenous and modern health care are weak in the area of preventative care in the developing world. Part of the problems rests in the fact that preventative care depends largely on personal participation and, as discussed in previous sections, it is often difficult to encourage individuals to make health and nutritional behavioral changes. Furthermore, there tends to be undue faith in

drugs based on the way that health care is publicized and despite the scarcity of funds. People tend to think that something tangible, like medicine, is worth more of their money than is merely medical advice (Green, 1991). As Green (1991, 754) says, "Most people are concerned about remaining or becoming healthy, but not very well informed nor very energetically committed to changed activity patterns for better health."

In both developed and developing countries, resources are skewed toward the "top of the health system pyramid" (Saxenian, 1995, 47). In fact, in the developing world about 30-50% of health care budget goes toward tertiary care (Saxenian, 1995). This causes major inequities in health-care availability as tertiary care facilities are inevitably located in urban areas and often cater to the high-income sector (Iyun, 1996). In addition, secondary and tertiary care tend to require highly-trained specialists and equipment, both in short-supply in the developing world. Primary care presents a much better opportunity for the use of lay personnel and the involvement of communities and grass-roots organizations. The World Health Organization reports that 94 out of 151 countries researched indicated that strategies for community participation in health care were being implemented (WHO, 1993). Individual and community investment in health care not only helps provide more medical care, but often better medical care as people treasure most what they have invested in personally (Curtis and Taket, 1996).

Undoubtedly, the most cost-effective interventions are at the "bottom" of the medical pyramid in local hospitals, health centers and community clinics, not in tertiary-care hospitals. Non-governmental organizations and donors often support this top-heavy investment in unsustainable tertiary care. In countries where external funding makes up a large portion of the health-care budget, changes in goals from NGOs and others can have

a significant impact on health-care focus. They should help analyze the long-term feasibility of programs before they invest in them (World Bank, 1994b). New commitment from national governments and the international community alike to the provision of basic health-care packages is the only way in which 'health for all' in the developing world will be feasible in the foreseeable future.

"Western" versus "Traditional" Care in the Developing World

Much research goes into the careful placement of health facilities and into the analysis of subsequent utilization by the population (Stock, 1983; Anderson and Rosenberg, 1990; Bailey and Phillips, 1990). However, even when people have access to health-care services, full utilization may not occur for a variety of reasons. In many areas in the developing world, a reluctance to use "modern" health-care is based on the perception of services as "Western" or generally unfamiliar and intimidating.

Traditional healers are found throughout Asia, Latin American and Africa. The number and variety, however, seem to be greatest in Africa where there is a wide diversity of tribal groups. It is estimated that there is a traditional healer for every 500-1000 people in Africa. It is quite common in Africa that a traditional healer, one that uses magic, herbs, or a combination, is often consulted about illness before any other type of medical intervention is pursued (Roemer, 1993). This plays a major part in the "repeatedly cited syndrome of coming too late or only for overtly life threatening conditions" to modern medical facilities (Green, 1991, 750). There are a host of reasons for this reaction. First of all, many African belief systems incorporate the idea of bad spirits or curses. In other words, many illnesses are believed to have spiritual, not physical, sources. Secondly, traditional healers are usually well-known to the "patients" and their families and often live

close by (Uyanga, 1979). Last of all, although sometimes most importantly, their fees are usually reasonable and can sometimes be covered by an exchange of goods or services (Roemer, 1993).

Traditional midwives are also still used frequently in Africa. These midwives commonly have no formal education but have given birth themselves and attended numerous births under the tutelage of other traditional midwives. In most cases, these women have reached menopause and have assisted in childbirth for up to 20 years before assuming the official title. These midwives are used and preferred by mothers for a host of reasons, many of which are the same as those discussed above for traditional healers. However, there is another aspect to use of midwives since pregnancy in Africa is rarely regarded as an illness and laboring mothers are not seen as "patients." The birth of a child is most often viewed as a happy social occasion in which most of the women of a village will participate. The traditional midwife generally serves as the guide and leader in the birth process. Although there are many drawbacks to this type of birthing environment, including the danger of infection to the mother, many women continue to choose this type of birth over the "Western" delivery, even when it is available and affordable (Ityavyar, 1984).

Although many countries have virtually limited their medical systems to a delivery of "scientific" health care, many others have attempted to embrace the more traditional, culturally-familiar forms of health care. Several of the Southeast Asian countries, such as India and Bangladesh, have given legal recognition and state support to the traditional healing arts. Others, such as China, have been successful in integrating various forms of health care, both traditional and modern, into a single system (Pederson and Baruffati,

1989). Although not officially, many African communities have also intermingled the traditional and modern health care systems. However, there is still a general reluctance in personnel in the "modern" health care facilities to accept the "traditional" based on personal misgivings or on negative past experiences. Historically colonial administrators considered traditional African medical practices to be "primitive" or even "satanic" (Iyun, 1994, 249). Because many children, in particular, die due to treatment being sought too late in the progression of disease or malnutrition, many health care providers often feel justified in their fear of traditional practices. Furthermore, it is becoming more difficult to separate "traditional" healing from "drug peddlers" and "quacks" who have little or no medical knowledge (Nigerian fieldwork, 1996).

"Uniqueness of Place" and Health Care in the Developing World

Location has long been related to disease in both the medical and social science fields (Barrett, 1993). Recently, however, within the social sciences, including geography, there has been a renewed emphasis on cultural landscapes and the uniqueness of place. Environmental, individual, and societal explanations and approaches are being sought in both traditional and non-traditional health care settings in the developing world (Scheper-Hughes, 1990; Gesler, 1992). This return to an emphasis on the relationships between the spatial and the cultural aspects in health is in essence a return to the focus on uniqueness of place. According to many within the field, place should no longer be considered simply as a location or a "mere container of events" but as a vital factor in health and well-being of a community (Jones and Moon, 1993, 515). Place is a human-created reality as much as a physical one; therefore, the experience of place should naturally converge with the socio-ecological perspectives and policies of that place (Kearns and Joseph, 1993; Kearns,

1993). Although these concepts have been lauded by many, place is seldom incorporated into research and policy-making (Jones and Moon, 1993). The underlying cause for this exclusion may be that while culture and place are undeniably linked to health and nutritional status, difficulty arises into their actual incorporation into quantitative studies and policy development. As Gesler (1992, 738) points out, medical beliefs in a community stem from cultural characteristics that often surpass the immediate "observable phenomena."

Despite the hardships of assimilating theory into practice and adapting regional policy to local reality, many in the health-care field are now attempting to just that. One way in which health care systems are being adjusted is by a concerted effort to use providers that are culturally acceptable to the patients. Belief systems in an area not only affect how the local people view disease and health, but also how they view the people and places that serve them. If people feel "in place" rather than "displaced" in a health-care facility and with the health-care workers, they will be more likely to continue to use the service and to trust the treatment or advice given to them (Kearns, 1991, 519). Caregivers should ideally be culturally and socio-economically compatible with those that they serve. There may be a feeling of "disconnectedness" from the health-care system if caregivers are perceived as educationally and economically too far removed from the general population. Moreover, only health-providers intimately connected and rooted within a community can truly understand the nuances of belief systems that often affect the health of members of that community and their willingness to seek treatment. In history, traditional healers in Africa have used their complete knowledge of the cultural, social and physical environment of the patient to deliver the most thorough treatment (Ityavyar,

1987). In evidence of this, a recent study shows that projects in the developing world that are compatible with local cultural and socioeconomic conditions produced twice the return as those that were deemed incompatible (Brown, 1991). Similarities and identification with a health-care provider can produce trust and help build long-term relationships that can translate into improved health (Anikpo, 1993).

Conclusion

The preceding literature review has highlighted selected topics concerning food security, health and nutrition in sub-Saharan Africa with emphasis on issues of availability and acceptability of food that impact the study area of southwest Nigeria. The political, economic, development, and agricultural issues discussed in Chapter 2 set the structural stage for the food crisis now occurring in many African countries, including Nigeria. These factors must be taken into consideration in food and nutrition studies as they impact each individual's ability to obtain food. As later chapters will show, economic issues are critical to many food and health decisions. Because of rising inflation and diminishing available household funds and resources, Nigerian women are presently making critical health and nutrition decisions for their families. Many are employing necessary "survival" strategies so as to best make use of the available resources. Without a basic understanding of development and agriculture within the developing world, it would be difficult to fully understand the changes that individuals are being forced to make.

This chapter explored the issues dealing more explicitly with acceptability issues in diet and health decision-making in the developing world. As discussed earlier, available food is not always acceptable for a host of reasons ranging from differing individual tastes to varying cultural standards.

CHAPTER 4

THE STUDY OF FOODWAYS, NUTRITION AND HEALTH IN A NIGERIAN COMMUNITY

Nigeria and Its People

Nigeria has often been referred to as the "giant" of sub-Saharan Africa. Its prominence on the continent has been compared to that of Brazil's in South America. Yet Nigeria is daunting not so much in geographic extent as in population and diversity. It is the most populous country in Africa and the ninth most populous country in the world and is home to hundreds of different ethnic groups. Positioned in the western crook of Africa, it spans 923,768 square kilometers, about four times the area of the United Kingdom. Nigeria stretches from the Bight of Benin on the Atlantic Ocean to the edge of the Sahara and possesses an impressive resource base, including one of the world's largest reserves of oil. Its landscape, like its people, is marked by diversity and ranges from high rain forest in the south to thorn scrub in the Sahelian zone of the north (Simpson, 1994).

Official estimates of population in Nigeria are highly questionable and vary from 88 million by the 1992 census to well over 100 million by various other sources (World Bank, 1995; Okechie-Offoha, 1996, 4). Furthermore, the exact number of ethnic groups within Nigeria is not really known because of controversial census-taking methods and disagreement surrounding the criteria used to identify ethnic groups. Census-taking has not been reliable in Nigeria for a variety of reasons like high illiteracy rates and the highly-charged political nature of the census in Nigeria. Using the linguistic factor, however, one

survey estimates that there are 394 ethnic groups within Nigeria. Others call 374 a "realistic figure" (Nnoli, 1995, 47).

In addition to the hundreds of smaller ethnic groups, there are three large, "dense, consistent and self-sufficient population groups" which dominate the cultural landscape of Nigeria (Nnoli, 1995, 26). These ethnic groups, linguistic communities or "tribes" as they are referred to in Nigeria, are the Igbos, the Hausas, and the Yoruba. The Igbos are concentrated mainly in the southeast although they are found throughout the country. There are virtually no major cities within Nigeria that do not have an Igbo enclave. They are united linguistically by the Kwa language of the Niger-Congo family. The Hausa ethnic group or tribe is found primarily in the northern region of Nigeria. The Hausa group is bound by a language that is spoken by savanna peoples both inside and outside of Nigeria. Within Nigeria, the Hausa are often called Hausa-Fulani because of their deeply interconnected relationship with the Fulani, an ethnically distinct people. The Fulani are historically nomadic cattle-raisers, but in recent times have often settled into semi-sedentary villages or even urban areas where they have been fully assimilated into Hausa culture and language. The Yoruba, on the other hand, are found mostly in southwestern Nigeria, often called Yorubaland. Yorubas can be found in other African countries but have their greatest numbers in Nigeria where their population is estimated at 20 to 30 million (Cohen and Goldman, 1992). They share a common language, also of the Kwa group of the Niger-Congo family; however, many distinct dialects, such as the Egba, Ekiti, Ijebu, Ikale, Owo and Oyo dialects, can be found throughout Yorubaland (Nnoli, 1995). (See Figure 4-1 for a general map of Nigeria).



Figure 4-1: General Map of Nigeria

A common saying in Nigeria is that the Igbos have the education, the Yorubas have the money and the Hausas have the power. These three tribes in fact have many distinct cultural characteristics. Consequently, intense tribal competition is a distinguishing feature of Nigeria's cultural landscape. There are many sources of tension between the large and small ethnic groups which have only been intensified first by colonialism and more recently by political conflict. For example, the British policy of indirect rule was undoubtedly helpful in the preservation of separate cultures by incorporating traditional political institutions into colonial administrative units. Nevertheless, this same policy encouraged ethnic and regional separatism and "unleashed" competitive and divisive forces that allowed the British to control Nigerian nationalism (Nnoli, 1995, 47).

Since independence the constant turnover of national governments and persistent political turmoil have added to the tradition of separation between the tribes. The Biafran war, or Nigerian civil war, of the late 1960s is evidence of the deep antipathy between the major tribes of Nigeria. The war was a result of the Igbo push for independence from the rest of Nigeria. It lasted 30 months and ended in January of 1970; however, the human and material losses and negative consequences that resulted from the war have been long-lasting. Although it may have strengthened Nigeria's "territorial integrity," the war also intensified ethnic conflict within the country (Nnoli, 1995, 141).

Religion has been another area of conflict within Nigeria. Followers of Islam are approximately equal in number to those of Christianity according to many sources. Traditional religion, in its purest form, is practiced by an estimated 10% of the population although traditional religious customs permeate almost all religious activity within the

country. Islam is predominant in the north, Christianity in the east, and a mixture of Islamic, Christian and traditional religions in the Yoruba west (Okechie-Offoha, 1996).

There seems to be little outward conflict between practitioners of traditional religion with other religions as it is polytheistic in nature. Nonetheless, great tensions exist between the Islamic and Christian segments of society, particularly in the north. Many in the northern regions are said to have "open contempt" for those who do not share their beliefs. It has been said of the people of the south, on the other hand, that they approach religion with a "remarkable moderation and nonchalance" (Okechie-Offoha, 1996, 5). This may be due in part to the long-term extensive contact the south has had with international missions from many denominations (Simpson, 1994).

How the Country of Nigeria Came to Be

Archeological finds in Nigeria can date the history of the groups now living in the country back more than 2000 years. However, Nigeria as a single political entity is much younger and is the result of European intervention rather than natural progression. The Portuguese were the first Europeans to reach Nigeria in 1471, followed by the Dutch, French and English (Simpson, 1994). Between 1650 and 1850 Nigeria was significantly affected by the European slave trade. When Britain declared slavery illegal in 1807, it deployed its navy to West Africa to help impose compliance with the ban. With British "protection" came its intervention. Christian missionaries and traders alike began to play an active role in Nigeria, especially in the southern regions. At the same time, Islam, which was introduced to Nigeria around the eleventh century, began to push its way south into the middle belt of Nigeria (Metz, 1992).

After the slave trade ended, Europe's greatest interest in Nigeria was in its palm oil, ivory, cocoa and other natural resources. However, in the 1800s Nigeria was rocked by internal conflicts such as the jihad, or holy war, and Yoruba wars of the 1830s. European countries began to worry that this might affect trade with the region. In 1861 the British established a colony in Lagos and in 1886 founded the Royal Niger Company. The British eventually instituted colonial rule around 1900, but Nigeria really became one country in 1914 when the Southern and Northern Protectorates were joined (Okechie-Offoha, 1996). The name Nigeria, however, was first "invented" by Flora Shaw in an article for the *The Times* in 1897 (Simpson, 1994, 184).

The goal of British colonialism in Nigeria was general extraction - of raw materials, crops, and tin. The investment in the country, therefore, was made in accordance to commodities and their export potential. For example, the British did develop some infrastructure such as railroads, but with the express purpose of facilitating export. Overall there was very little settlement by British, except by British company workers. There was no attempt to take over agricultural land in order to produce cash crops. Unlike in other African countries such as Kenya and Rhodesia where white farmers began to take over all agricultural activity, farming in Nigeria remained in the hands of indigenous farmers. Although these farmers were not forced to produce cash crops and did not significantly change their manner of farming to grow cash crops, smallholders were definitely affected in that they were drawn into the cash economy. While not earning great amounts of money, smallholders nevertheless became consumers of low-priced manufactured goods.

In general, the demand for cash crops was met by smallholder extensification rather than intensification. Smallholders most often incorporated the production of cash crops into the bush-fallow system. Extensification was made possible by the relatively low population density and by the rail and road systems that were in place in to ship agricultural products to the modern ports in Lagos and Port Harcourt. Development, therefore, was based on an economy that was "extractive rather than constructive" (Simpson, 1994, 187).

Nigerian Independence

Nigeria gained independence from Britain in October of 1960 and appeared to have a bright future with an economy and political structure that reflected both its pre-colonial and colonial years (Simpson, 1994). Nigeria officially became the Federal Republic of Nigeria in October of 1963 (Metz, 1992). At the time of its independence it was not only self-sufficient in staple foodstuffs, but 60% of its gross domestic product came from agricultural products (Nwulia, 1986). In addition, exportation of oil was initiated in 1958 in the southern regions of Nigeria. Although profits were still low in these first years, the economic prospects were promising (Lovejoy, 1992). Furthermore, the political machine was geared toward independence, and despite lively controversy, it appeared to be healthy. Unfortunately, the years since its birth as an independent nation have been fraught with political chaos and economic highs and lows.

The Political Environment in Nigeria

When Nigeria gained its independence in 1960, it retained the three regional governments as set forth in the 1954 Lyttleton Constitution. Each of these regions retained substantial economic independence while the federal government kept certain

powers such as the responsibility for banking, external affairs and defense. A federal parliament was created in which representation was proportional to population based on the national census (Lovejoy, 1992).

The new federal government devised the first development plan in 1962 in which the objective was to increase and then maintain the standard of living of the Nigerian people (Federation of Nigeria, 1962). The plan included goals of funding new universities and schools and of building major infrastructure. It also set out goals for primary production and manufacturing that were to be met by 1968. Half of the funds were expected to come from abroad and half were to be from the Nigerian government, mostly from oil profits. Although many praised the plan for its insight into the country's needs, it was criticized for its lack of clarity and means for attaining the goals set forth (Lovejoy, 1992).

The inadequacy of the plan, nonetheless, was not ultimately the downfall of the first development phase. After the first federal parliamentary elections in 1964, a political upheaval occurred in Nigeria. In January 1966 there was a bloody coup by Igbo army officers. Many political leaders, including the Federal Prime Minister, were killed. The army's commander in chief, General Ironsi, intervened and restored discipline within the army and became the first military leader of Nigeria. Ironsi was killed, however, within a few short months and tribal massacres began taking place throughout northern Nigeria, throwing Nigeria once again into political turmoil (Lovejoy, 1992; Simpson, 1994).

Political Instability in Nigeria

The initial political instability, chaos, and violence in Nigeria's earliest years set the stage for its future. Since its independence, Nigeria has had numerous coups and

assassinations, as well as a devastating civil war in which over 2 million people were killed. Many experts on Nigeria have speculated as to why Nigeria has been unsuccessful in establishing a stable government. Some blame colonialism, the poor economic situation or the oil boom. Most agree that tribal competition is at the heart of many of the problems. There has been an effort to balance the interests of the Hausa/Fulani in the north and the Igbo and Yoruba in the south. States were redrawn in 1967, 1976, 1987 and 1991 in an attempt to accommodate the minor ethnic groups. The final count of 31 states now presently holds. But the "duality" in Nigeria is still responsible for much of the political conflict within the country. This reality was made apparent in the 1993 election in which a southern candidate, Abiola, allegedly won the election but never took office because the election was annulled (Nnoli, 1995).

Corruption and fraud are also key elements in Nigeria's political struggles. A weak and fragmented civil society has been unwilling or unable to stop the plunder of national coffers and the atrocious violation of human rights carried out by political and military leaders. Although some groups have voiced grievances, most groups are too small or too narrow in focus to have a great impact. A case in point is that no human rights group even existed in Nigeria until 1987. Furthermore, those powerful individuals who do speak out are often lured to the opposing camp once power positions are established. For example, after the annulled elections of 1993 many of Abiola's staunchest supporters were simply absorbed by the military government's regime. These events exposed the "opportunism and shamelessness of those elites who will eat with the devil once power and money are attached to the meal" (Ihonvbere, 1996, 208).

Nigeria, the Economy, and SAPs

The rapid influx of money during the oil boom of the 1970s encouraged corruption and mismanagement in Nigeria. Oil profits accounted for more than 95% of foreign exchange and 80% of government spending. As long as the oil boom continued the disastrous impact of poor management was not evident. However, in the 1980s international prices dipped greatly and export incomes, imports, and gross domestic product declined. The government and president were unprepared for economic crisis and debt rose tremendously during the years of 1982 and 1983. In 1983 the government began talks with the IMF, but the talks disintegrated over the conditions of devaluing the naira, liberalizing trade, and removing subsidies on fuel and other commodities. A new government, headed by General Buhari, installed in 1983 tried instead to reign in spending, but the efforts were too little and too late (Lewis, 1996).

When Buhari was ousted by General Babangida in August of 1985, the government opened a nationwide debate over IMF economic reforms (Oyejide, Soyode, and Kayode, 1985). The masses expressed distrust and discomfort over the IMF and World Bank conditions placed on loans. In response Babangida introduced his own package which has been called an "orthodox measure of reform under a nationalistic guise" (Lewis, 1996, 83). Within a year, a comprehensive structural adjustment program was underway with important policies urged by the World Bank and IMF. Eventually a deal for available credit was worked out with the IMF. Although Nigeria never drew on the credits, the IMF's endorsement helped them with debt negotiations and borrowing from the Bank and bilateral donors. Basically they did comply with the donor conditionalities and the SAP had significant early successes in stabilizing the economy and

slowing decline. The program did devalue the naira and traditional exports crops did increase. Even manufacturing witnessed a dramatic revival. But there was discontent and lowered real wages for a great number of people and in 1987 several anti-SAP protests took place. Growing discontent among Nigerians on the eve of the (supposed) political transition from the military regime contributed to the stalling of reforms. In January 1988, Babangida announced a "reflationary" budget which would include many compensatory measures such as increasing wages and public spending. The formal SAP ended in 1988, but the government vowed to continue with the key policies and the international community was moderately heartened by Nigeria's policy changes and economic performance. The IMF facility was extended, which allowed renewed access to additional finance from other donors and helped Nigeria to reschedule their \$30,000 million debt. In the end, however, IMF refused to approve a new "standby facility" when the existing agreement lapsed. By the end of 1990 the Nigerian SAP was in trouble as they had political costs for those in power. The program naturally decreased the opportunities for state patronage, including a reduction in government contracts and the removal of 'rents' from import licensing. But other opportunities for corruption were available as agricultural exports grew and the financial services sector expanded. The 'rents' which came up during liberalization were accompanied by the growth of parallel markets and illegal activities. Some of these have included commercial fraud, called '419' schemes, and took place inside and outside of Nigeria. In the early 1990s there were about 500 cases of fraud or "ruses" involving United States citizens. Estimates show that as much as several hundred million dollars might have been made in the schemes by 1993 (Lewis, 1996).

In February 1991 the Nigerian government signed its third agreement with the IMF and negotiated a considerable package of debt relief. This was possible because the full extent of problems and mismanagement was not fully evident until 1992. The third IMF standby arrangement ended in April 1992, however, and poor economic performance and delinquent debt service eliminated the opportunity for new IMF facility and debt rescheduling. Soon afterwards, in 1993, Nigeria stopped servicing much of its foreign debt and was \$4 billion in arrears on external payments (Lewis, 1996).

In addition to the already-existing economic problems, political problems in 1993 surrounding the transition from military to civilian rule forced the country into virtual "economic paralysis" (Lewis, 1996, 95). Chief M.K.O. Abiola, a Yoruba Muslim businessman, won a decisive victory over Babangida in a national presidential election; however, three days after the election, it was officially annulled. Because there was intense pressure for Babangida to step down from power anyway, an Interim National Government (ING) was installed. The ING was headed by Chief Ernest Shonekan, a prominent corporate executive and close advisor to Babangida. Despite this turnover, the economy was thrown into chaos as workers went on strike and people frantically made a run on banks. In an effort to show good faith Shonekan announced a date for new elections, released many political prisoners, and resumed talks with multilateral institutions concerning the economy. Pressure from these talks forced Shonekan to lift domestic fuel subsidies and automatically rule prices rose by 700%. An immediate general strike was called and Abacha, the Secretary of Defense for the ING, forced Shonekan out and seized control himself.

After Abacha's takeover, the SAP in Nigeria was essentially replaced by a statist and nationalist agenda. Currency controls were reinstated and this produced a new phase of corrupt transactions. Productive activities were cut off from hard currency and export incentives disappeared. Manufacturing bottomed out at 28% of capacity utilization and non-oil exports dropped to less than half of what they had been two years earlier. Imbalances in foreign exchange caused the naira to drop as low as 120 per U.S. dollar until it finally leveled out at 80 naira per dollar. Furthermore, cumulative arrears on external debt rose to \$8 billion (Lewis, 1996).

The Oil Boom and Agrarian Crisis in Nigeria

Much of the economic and political problems discussed above have been blamed in part on the oil boom in Nigeria. The oil boom of 1973 poured massive amounts of money into the economy of Nigeria, causing an era of oil-based accumulation and constructing a state based on "petrolic accumulation" (Watts, 1987, 3). Major macroeconomic changes occurred within the country due to the newly-found oil wealth. There was a rapid growth in government spending and revenue, a massive construction and import explosion, and rising inflation. Nigeria proved to be what has been called a "high absorber oil state." Due to the oil boom it began to face hyperinflation, devaluations, unwieldy bureaucracies, stagnation and mounting foreign debt. Nigeria had a total foreign debt in excess of \$20 billion by the early 1980s. Furthermore, an agrarian crisis appeared to be mounting due to "Dutch disease" in which a booming oil economy adversely affects other sectors, especially agriculture (Watts, 1987).

At the time of independence Nigeria was self-sufficient in basic foodstuffs (Nwulia, 1986). Into the 1970s Nigeria was still an exporter of agricultural products. It was the

largest exporter in Africa of groundnuts and palm produce and the second largest exporter of cocoa. Its wealth was still agriculturally based and over 60% of the people were still employed in agriculture. Most of these agricultural workers were smallholders who used primarily family laborers supplemented by occasional wage labor. Since the 1970s agricultural exports have been minimal with cocoa, cotton and palm oil representing virtually the only ones from 1975 to 1989 (Delgado, 1995).

Nigerian agriculture has always been characterized by great diversity. Cropping patterns, for example, vary widely throughout the country. So heterogeneous are farming patterns that accurate data on agriculture in Nigeria are difficult to obtain. Data are so sketchy and unreliable that researchers cannot agree as to the extent, or even the existence, of an agricultural crisis in Nigeria. Some claim stagnant or falling agricultural productivity, while others claim that productivity has increased rapidly in some areas since the 1970s due to rising farm prices and primary crop smuggling across national borders. Some of this dispute is undoubtedly due to the sketchy, inaccurate or non-existent data in Nigeria; however, part of the debate may stem from great regional differences in cropping patterns, market activity, and general productivity (Watts, 1987).

Despite a lack of consensus concerning the magnitude and scale of the agrarian crisis in Nigeria, many negative effects of the oil boom in Nigeria are evident. First of all, corruption has become rampant. As Watts observed, "corruption mushroomed as a major growth industry" (Watts, 1987, 4). Achebe in 1984 called Nigeria one of the most corrupt nations in the world. Secondly, the nature of the state itself changed, expanding and becoming more interventionist. Public investment grew at astounding rates, but so did government with the numbers of civil servants, bureaucrats and state workers growing at

equally rapid rates. Although 6.5% of the budget was designated for agriculture in the budget, a mere 3% actually was paid out and much of that was suspected to have been manipulated and ultimately diverted away from agriculture (Watts, 1987).

Agriculture in Nigeria

As mentioned previously, Nigeria's economy prior to the oil boom was based almost entirely on agriculture. Furthermore, the country was self-sufficient in all of its staple foods. Yam, cocoyam, cassava, and beans were grown in the south. Maize, millet, sorghum, and groundnuts were grown in the north. Even some rice was produced, although not in great quantities (Nwulia, 1986).

It was during the late 1960s and early 1970s that the food situation in Nigeria changed drastically. During this time period food prices rose between 85% and 125% while the income of the average Nigerian remained the same (Nwulia, 1986). Many causes have been attributed to this change. First of all, demand had outstretched supply as the population continued to grow quickly. Secondly, there was an emerging middle class that caused price hikes due to their newly-acquired consumption habits and patterns. In essence a "consumption culture" was forming that helped make farm produce prices rise and that contributed to high import bills. "The bills for wheat and rice imports, once occasional luxuries for the affluent home, have increased because the 'aristocratic' eating habits of the middle classes have been extended to the masses" (Nwulia, 1986, 2). Although Nwulia (1986) claims that 98% of the food needs could still be met internally by 1977, imports were on the increase and agricultural productivity on the decline. During the oil boom years decreasing agricultural productivity was a result of artificially low domestic food prices that diminished incentive for the Nigerian farmer (Porter, 1994).

By the 1980s Nigeria was a major importer of foods. In an effort to correct some of the obvious agricultural problems, in 1988 the government pledged to try to "sustain growth in production and complete agricultural transformation that is necessary for the development of rural areas" (Stefil, 1989, 1). Food production, consumption and supply were in the 1980s a central issue in national politics. Despite the repeated claims of support, however, the government continued to implement policies that greatly hindered agricultural development. For example, the government was instrumental in the 1980s in flooding the market with imported goods that they deemed "essential." Cost of food imports doubled from 1978 to 1981 (Nwulia, 1986). On the list of government-sanctioned essential items were cornflakes, canned meat, tomato puree, sugar and fruit juices. Many of these products were cheaper and preferable to domestic goods and thus undercut national agricultural production (Ikpe, 1994).

Nigeria is presently experiencing food shortage caused by the neglect of agriculture, the failure of agricultural policies, population pressure, low yields, and the changes in food consumption patterns (Nwulia, 1986). Newly acquired food habits that were encouraged and supported by the oil boom economy are no longer affordable and yet many families still choose "luxury" foods that they have come to prefer over the basic staple foods. Bread, for example, has become quite expensive as compared to the average Nigerian wage, but many continue to purchase it on a daily basis. Even the preferred staple foods, however, like pounded yam have become too expensive for many families to eat on a regular basis. Furthermore, the move of rural labor to cities, as is occurring in many African countries, is only aggravating the situation. As people move to the cities for the "easier" life, farms are being abandoned. Many people believe that education and

training are the answer to their economic problems and yet well-paid jobs are scarce, even in the cities. Meanwhile, food production and food availability appears to be waning.

Hunger, Malnutrition, and the Nigerian Population

Although the exact population figures may be in debate, it is generally accepted that the Nigerian population is still continuing to grow rapidly. The average annual percentage growth rate is approximately 2.9% and estimates of continued future population growth remain high as a full 50% of the population is presently under the age of fourteen. Average fertility rates of 6 children per woman remain high as well (World Bank, 1995). Based on these figures, it can be calculated that Nigeria doubled its population over the short span of 28 years. Despite this startling revelation, Nigeria has done little to officially reduce its fertility rates, especially in the rural areas where 75% of the population still resides. Many of the rural communities, because of long-standing tradition or perceived economic benefits, seem unaware or unconcerned with family planning or "child spacing" as it is called in propaganda posters in Nigeria. A strong patriarchal society also contributes to this trend (Bankole, 1995). Urban dwellers, on the other hand, tend to have more access to birth control and to be more willing to seek it on their own (Bamboye and Lapido, 1992). But even with urban areas experiencing some change, there is little evidence of a population slow-down in Nigeria.

A growing population means more people to feed. In a country immersed in political and agricultural crises, this has serious implications for the future health and nutritional status of the Nigerian people. A 1995 World Bank reports estimates that 54% of the children under the age of five in Nigeria are suffering from stunting, a condition in which a child is under-height for age. In addition, 36% are under-weight for age and an

estimated 16% of all children under the age of two are suffering from wasting. The Nigerian Federal Office of Statistics reported similar figures in a 1991 publication (Nigerian Demographic and Health Survey, 1991). These statistics indicate that Nigeria has a serious nutrition problem among its children that rivals that of almost any other sub-Saharan African country.

Older children and adults are suffering from nutritional deficiencies in Nigeria as well. The average daily consumption of kilocalories and protein decreased from the 1970s to the 1980s and is presently well below the recommended FAO minimum nutrient requirements (Atinmo, 1983; World Bank, 1995). A study in Oyo State in the 1980s indicated that daily per capita protein consumption was only 44.43 grams with only 9% of that coming from animal sources. This was less than 25% of the recommended national minimum in Nigeria (Adeniyi, 1984). Since the time of this study, the economic situation has greatly worsened. Households are being forced to adopt "survival strategies" in an attempt to adequately feed family members (Elabor-Idemudia, 1991). Women are shouldering much of this responsibility as their agricultural productivity often determines the amount of food that is available to the household in Nigerian communities (Olawoye, 1988). As women's involvement in economic activities increases due to necessity, the health and nutrition of the women themselves and of their children will almost inevitably suffer.

Why a Food Study in Nigeria?

Unemployment, inflation, rural-urban drift, environmental abuse, smuggling, currency trafficking, and bankruptcies have reached new proportions. Political assassinations, gang-style murders, prostitution, and armed robbery have become familiar to all Nigeria. Thousands are making claims for political asylum in South Africa and Zimbabwe, as well as in parts of Europe and North America,

and the universities have lost many of their qualified professionals. Crime has taken over the major cities as the sale and consumption of drugs have reached unprecedented proportions. Life has really become nasty, brutish and short (Ihonvbere, 1996, 209).

Ihonvbere's statement paints a vivid picture of a country in crisis. Nigeria is a country that went from self-sufficiency in foodstuffs in the 1960s to unbelievable oil wealth in the 1970s to economic and social crisis in the 1980s to political chaos in the 1990s. While the military government has gotten wealthy beyond imagination, the average people numbering over 100 million, once adequately fed and productive, are suffering and hungry. The naira, equal to \$0.9996 in 1985, is now equal to 1/80 of a U.S. dollar while wages have remained steady. Those who could afford to buy vehicles in the 1980s cannot afford the tires for those cars in the 1990s as the tires now cost what the car once did. The average GNP per capita fell from \$1180 in 1980 to \$310 in 1993. Approximately 73% of the average household's income must now be spent on food (World Bank, 1995).

Most Nigerians no longer worry about luxuries as they did during the oil boom years. When surveyed, well over half the Nigerians answered that acquiring the basics of food, water, and shelter were their major concerns (Okpara, 1988). Many Nigerians fondly recount their childhood in which food was adequate, if not abundant. Foods that are affordable only to a few were once staples in the diet of the masses. Eggs, tinned milk, and meat are luxuries that can only be purchased on special occasions. Children who were well-fed only a few years ago now have wasting bodies and thinning hair as a result of malnutrition. The very air of misfortune and want surrounds the marketplace, the hospital, the taxi stand, and encourages crime and corruption.

While all segments of society, even the professional and the educated, are suffering under the military dictatorship and failing economy, the vulnerable segments of society are feeling the full brunt of the crisis. For the farmers, especially women farmers and their children, it is now a situation of life and death, not merely of unmet desires. Women are being forced to rethink every aspect of their domestic lives - their child care habits, food habits, work status, farming choices, and household budgets. However, the Yoruba community in Nigeria is one that is deeply rooted in its strong cultural traditions. Food traditions in Yorubaland have been especially unwavering throughout the years. In the past, attempts to change or affect these habits have often met with unequivocal failure. Only the most desperate of circumstances appear to affect the foodways of most Yoruba households.

A food study in the Yoruba region among the Yoruba women is therefore ideal. There are undoubtedly numerous constraints operating to prevent long-term change in food habits and yet strong motivations now exist for such changes. The social marketing of soya among agricultural institutions, health-care providers, social institutions and non-governmental organizations is now widespread in the area in and around Ogbomosho, one of the major cities in Yorubaland. This campaign, begun in the mid-1980s and pursued in earnest in the 1990s, provides an opportunity to gauge the impact of one food and nutrition campaign and allow for the exploration of specific constraints and motivations to changes in foodways in a real-world situation. Analysis and conclusions drawn from this study may impact future research directions and future policy-making in nutrition campaigns in this region, but should also add to the overall understanding of decision-making processes as they relate to food habits in the developing world. The following

section discusses the study area in Nigeria, the traditional diet found there and aspects of soya as a food. This section is followed by a section that describes in detail the methodology used in my research analysis and in the fieldwork carried out between June and November of 1996 in the Yoruba region of Nigeria.

Health, Nutrition, and Food Study in Yorubaland

The term "Yoruba" is said to mean "cunning" and is believed to have been given to the ethnic group by the Hausa/Fulani of northern Nigeria (Forde, 1951). The Yorubas, as mentioned previously, are one of the major ethnic groups or "tribes" of Nigeria and live primarily in the southwestern part of the country. The region called "Yorubaland" is bounded by the Atlantic Ocean in the south, the River Niger in the north, the Republic of Benin in the west and the Benue River in the east. The region includes the states of Ogun, Ondo, Oyo, Osun, Kwara, and parts of Lagos and Kogi (Sadiku, 1996).

The census in 1992 estimated the population in Yorubaland to be approximately 18.8 million, but Yoruba people can be found throughout the country of Nigeria as they have a strong tradition of migration (Sadiku, 1996, 126). Yoruba culture also thrives in places around the world such as Sierra Leone, Cuba, and Brazil. There are some strong enclaves of Yoruba people in the United States as well. In addition to being quite mobile, the Yoruba have traditionally been very urban people. The Yoruba city of Ibadan, Nigeria, for instance, has the second largest population on the continent of Africa after Cairo, Egypt, and has the largest population of any city in sub-Saharan Africa (Sadiku, 1996).

Although the Yoruba tribe is divided into several subgroups, each with its own dialect, the group as a whole consider the town of Ife to be their place of origin. The

Yoruba people claim to have descended from Oduduwa, a deified hero whom is credited with the creation of the earth. The various branches of the Yoruba-speaking people are supposed to have come from his seven grandsons (Forde, 1951, 4). In addition to Oduduwa, the Yoruba have traditionally had several gods or dieties to whom they have paid tribute. The supreme diety is Olorun, but there are some 400 lesser gods and spirits known as orisa, most of whom have their own priests and followers. Individuals commonly worship one or more orisa either because they have been "called" to that diety or because they have "inherited" him or her from their family (Forde, 1951). Each orisa has its own personality and special characteristics. They have their own town of origin and are often mythologically connected to some natural feature such as a river. There are often taboos and observances attached to an orisa as well (Barber, 1997).

Although many Yoruba now profess adherence to Christianity or Islam, traditional religion still permeates much of the life of the average Yoruba. It is part of their history and heritage as is evident in the Yoruba music, song, myths, and proverbs. It still forms the foundation of much of their world view (Sadiku, 1996). Many still practice traditional religion alongside Christianity and Islam, especially in times of trouble. Although very tolerant of all religions, many Yoruba are hesitant to admit to the continued practice of traditional religion as it is officially shunned by many churches and often viewed as not "modern" or Western.

Family life, like religious life, is still guided by the traditional system in Yorubaland. In general, the Yoruba family system is extended and patrilineal, meaning families tend to live with or close to the husband's relatives. Families customarily live in "compounds" with extended families that can include not only children, parents and

grandparents, but also brothers, sisters, nieces, nephews, uncles and aunts. In the truest sense, marriage in Yorubaland is between families and not just individuals. Once married, a woman is seen to be married to all the husband's kinsmen. This extended family often includes other wives as polygamous marriages are still quite common, not just in Muslim households. Polygamy is still generally accepted in Yorubaland for a number of reasons; however, the two most important reasons are connected to productivity and status. First of all, an additional wife usually contributes more to the household than she takes. Secondly, additional wives produce additional progeny, thus increasing a man's status in the community (Boserup, 1997).

In polygamous marriages, the wives may or may not live in a single compound. Many times each wife and her children may live in a separate location from the other wives because of farming or family responsibilities. Although close family ties and communal living are the standard in Yorubaland, it is regular practice for a man and wife, even in a monogamous relationship, to live apart for economic reasons. However, even when relatives live apart, the village or community is still considered extended family. A neighbor or friend, for example, often feels free to discipline or report on others' children. There is a sense of collective responsibility for all families of a community (Sadiku, 1996).

Traditional Yoruba Diet

In the past 50 years very little has changed about the Yoruba diet in Nigeria. In the 1950s the main food crops were yams, maize, bananas, and cassava (Nigeria Handbook, 1953). Other important supplementary foods were cocoyams, beans, pumpkins and peppers. Kolanuts and groundnuts were also commonly eaten where available. The diet was enriched to a small degree by wild green vegetables and fruits,

palm wine and beer. Other than the cattle products that came from the north, the diet was heavy in starches with the main sources of protein were beans and palm oil (Forde, 1951). This varies very little from the present diet with the exception of a few additions, mainly imported foods. First of all, white bread has become a common food in Nigeria although it is often too expensive for the average Nigerian to purchase on a regular basis. Loaves are sold in every town, usually at prices ranging from 5 to 20 naira, depending on the size of the loaf. In addition, "tinned" or processed foods are now commonly sold in Nigerian markets. These foods range from canned tomatoes and fish to condensed milk. While the fresh equivalents of the tinned foods are often available, the processed varieties offer convenience. For instance, tomatoes are used in several of the traditional foods such as soup or jollif rice and those who can afford it purchase the tinned tomatoes as a matter of convenience. This trend toward a preference for tinned and imported foods began in the "oil boom" years when imports were subsidized and the naira was overvalued. Nigeria at the time was either not producing these goods at all or at least not at a price or standard of quality that was competitive with the imported versions (Kirk-Greene and Rimmer, 1981). Although this trend toward the heavy use of processed foods is occurring throughout much of the developing world, the oil boom in Nigeria accelerated this "delocalization" of diet (Pelto and Vargas, 1992).

The fluctuating economy in Nigeria has caused other changes in diet in recent years. Many Yoruba men and women report having to eliminate or reduce the amounts of certain foods in their diets in recent years. Many of these foods are "epanu," foods that are considered to be "not food" or snack foods. These include bread, groundnuts, fruits, and tinned milk. However, as economic hardships continue to build, basic staple foods are

also being reduced or eliminated. These foods include many of the basic protein foods in the Yoruba diet such as eggs, fish and meat. The portion given to each family member may be reduced or these foods may be eliminated all together for certain household members, usually the young children since they are customarily believed to require less of these types of foods.

Although the Yoruba diet has expanded in some ways in recent decades, as evidenced in the discussion above, the preferred staple foods in the Yoruba diet have changed very little. Yam, prepared in various ways, is still a mainstay of the Yoruba diet. Cassava, maize, and rice are also basic staples. These starchy "filling" foods are most regularly served with soups made of tomatoes, vegetables and sometimes fish or meat. They are viewed as the "heart" of a meal and are professed to be favorites among the Yoruba. A study in the 1930s by William Bascom recorded 56 food recipes in the city of Ife in Yorubaland. Of these 56 recipes, 47 were simply different ways to prepare yam, maize, plantains, cassava and taro, another starchy tuber. Six of the remaining nine were stews that might or might not have contained meat or fish. The last three were based on the use of melon seeds or groundnuts (Bascom, 1969). The presence of a diet heavy in starches was also evident in the 1950s as one researcher found that one of every five children brought into one hospital in the southwestern area was suffering from kwashiorkor, which is caused by severe protein energy malnutrition (Morley, 1958).

Any attempt to alter the basic diet in Yorubaland has proved difficult. Even introducing new varieties of yam or maize, for instance, has been challenging for agricultural research institutes such as IITA (IITA, 1992b). Furthermore, the addition of any new food into the traditional diet has been greatly resisted because of the extra

preparation time, cost, or unfamiliar taste. The soybean is the primary new food that has been promoted heavily in the Yoruba area of Nigeria and generally resisted until recent years.

In the study area of Oyo State, research on farmers in the region indicates that the four most commonly consumed foods of the region are yam, maize, cassava, and beans, generally in that order (Adeyeye, 1989). Although rice is a favored food, it is not a common staple food. It is most often eaten during holidays and celebrations. These common foods and soya, a recently introduced food in Yorubaland, are briefly discussed in the following sections.

Yam

Yams have a long history of cultivation in sub-Saharan Africa and are a very important staple crop in West Africa as well as in other parts of the world such as the Caribbean and Japan. White yams and cocoyams are both commonly planted and eaten in the Yoruba areas of Nigeria. They are a critical source of carbohydrates and calories in the average Yoruba diet. Although they are not a major source of protein, they do have a small protein content, ranging from 5% to 12% (IITA, 1992a).

While yams are a favorite in Yorubaland, they are becoming an expensive staple food. They require intensive labor because they should be staked and are difficult to harvest. For this reason, yam tends to be a "man's crop" in Yorubaland. They also represent a farming risk because they are often damaged in West Africa by disease and pests, especially the yam beetle. Furthermore, yams can be expensive to cultivate because of the high price of "seed yams" which are yam cuttings or even whole small tubers. In many cases a farmer must save about 25% of a yam harvest in order to have enough "yam

seeds" for the next planting (IITA, 1992a). Nevertheless, yam production and marketing remains high in the Yoruba area of Nigeria.

White yam, or *isu*, is an especially important staple food in Yorubaland and is most commonly prepared as *eyan* or as *amala*. *Eyan*, or pounded yam, is a white, dough-like mixture made from fresh yam. It is generally served with soup, or *obe*, that may have meat or fish as a main ingredient. Because it requires fresh yam, it is eaten during limited times of the year. *Amala*, on the other hand, is made from dried yam flour and may be eaten all year. It is grayish in color and has a similar consistency to *eyan*. While white yam and cocoyam are also served fried at times, *eyan* and *amala* are undoubtedly the preferred traditional yam dishes in Yorubaland and are believed to provide amazing health benefits to the consumer, including increased fertility.

Maize

Maize, or corn, was introduced to the African continent in the 16th century by Arab and Portuguese traders. The cultivation of maize spread rapidly because it is easily grown by smallholders using the bush-fallow system. It fits well into intercropping systems and is easy to weed. It is also highly resistant to pests and disease and gives good yields. Furthermore, it is easily stored and prepared. In many places in Nigeria early-maturing maize is depended on during the "hungry season," a time when crops from the previous harvest are almost gone and food prices are at their yearly peak. In the area around Yorubaland, maize has become more important over the past two decades. In the 1970s it was only a minor crop, usually planted around the house. However, due to research and improved maize varieties, access to subsidized fertilizer, and improved road

systems, it has become a major food crop in the past decade. It generally gives high yields in this area and is easily worked into traditional food preparations (IITA, 1992a).

Maize is an important staple food in Yorubaland because it can be prepared and eaten in a variety of ways. It is often roasted until almost black and sold on the street for very affordable prices. In this form it is almost always considered a "snack" by Yorubas, as popcorn would be in the United States. However, it is also used as a main dish at many meals. *Pap*, or *eko*, is a type of food made from wet cornflour which has the consistency of oatmeal or grits. This is commonly eaten for breakfast or given to small children because it is easily eaten and digested. Maize is also used as an ingredient in many dishes such as soup or mixed with beans. Because of its availability, general affordability and adaptability to the diet, it is the most common grain among farmers in Oyo State (Adeyeye, 1989).

Cassava

Cassava was first introduced to Africa by the Portuguese in the 16th century. Its cultivation and use has been widespread in Africa because it is well-suited to varying environmental conditions and traditional social and farming systems. It can be cultivated in both rain forest and semiarid areas of Africa on a wide range of soil types. Because of its heartiness, it has become an important drought food and has been life-saving in many famines throughout the continent. It has been a "reserve crop" in Nigeria since its introduction to the country because it can be left unharvested for long periods of time without damage (Nigeria Handbook, 1953). It is now the most important root crop in Africa and supplies an estimated 50% of population's caloric intake. It is rich in carbohydrates and its leaves contain up to 40% protein. One of its main drawbacks,

however, is that it contains relatively high levels of cyanogenic glucosides (cyanide) in both the roots and leaves. Although this is usually reduced through the traditional processing methods, cassava can present a serious health threat if it is not handled carefully, especially during times of drought when people become more dependent on cassava and may have lowered nutritional status (IITA, 1992a).

Much research is still being done to help reduce cyanide in cassava and to find ways to process it more efficiently. A majority of this research is being done at IITA in Ibadan, Nigeria in the heart of Yorubaland. Because of many programs to promote improved cassava in this area, almost 50% of the entire cultivated area in Oyo State was devoted to cassava. Companies such as Texaco Agro-Industrial (Nigeria) and organizations such as UNICEF have been active in Oyo State in promoting improved cassava varieties. In 1987 UNICEF led a major program, the Household Food Security and Nutrition Program, in Oyo State to combat malnourishment. They distributed 100,000 cuttings of improved cassava in order to increase the varieties of cassava on farms, especially on those operated by women farmers (IITA, 1992a, 76).

Cassava is commonly eaten in the form of *eba* or *fufu* in Yorubaland. *Eba* is made from cassava flour, or *gari*, cooked in boiling water until it is viscous and can be molded into a ball shape. It is similar in texture to *eyan*, but slightly more granular. *Fufu* is prepared by soaking cassava in water for several days and then squeezed in cloth until it has a dough-like consistency. Like the yam dishes of *eyan* and *amala*, the main difference in these foods is that one is prepared from flour while the other is prepared from fresh cassava. Both dishes are preferred served with soups and/or meat, as are the yam dishes.

Rice

Rice is both an indigenous and an introduced crop in Africa. The indigenous species, grown mainly in deep-water floodplains, shallow swamps and uplands, is still widely cultivated in Africa. The species of rice introduced by the Portuguese, Arabs and Indians in the 1500s is also still grown on the continent. However, much of the rice consumed is actually still imported. Rice became especially popular in between the 1960s and the 1980s when it was affordable due to an overvalued national currency and subsidized imports. During these two decades, the consumption rate of rice increased almost 5% a year in Africa. It is preferred by many people in Africa even to the staple foods of yam and cassava, but is often too expensive to purchase and consume as a primary food in the diet. Because of this, many governments are seeking to increase local production, mainly through irrigation systems (IITA, 1992a).

Rice is customarily found in Yoruba markets; however, its price is substantially higher per kongo (common Yoruba measure) than that of beans. Because of its high price, it is considered a food to be served at celebrations such as weddings or at holiday meals. It is regularly served as jollof rice, a very spicy one-pot dish made with tomatoes, peppers, onions, oil and meat or chicken (Vincent, 1985). It is also be boiled alone and accompanied by soup or meat.

Beans

Beans and peas, or legumes, are found in many varieties within Nigeria. There are cowpeas, red, white and soya. They offer an excellent source of protein, varying from species to species, and are generally affordable. The cowpea, or black-eyed pea as it is sometimes called, is an especially significant part of the West African and Yoruba diet. In

the 1970s the cowpea was the second most important pulse after the groundnut in Africa. Four West African countries were producing 91% of the world's cowpeas. It is used both for human consumption and as livestock feed. In addition to the pea itself, the leaves are a large part of the diet in many areas of Africa, especially in the south and east. It grows particularly well in the dry savannas, but much research has gone into developing varieties that do well in the forest zones of Africa (IITA, 1992a).

The cowpea is used in several traditional dishes in Yorubaland. It is most commonly made into a paste and then either steamed or fried. Fried cowpea "fritters" or hushpuppy-like balls are called *akara* and are commonly for sale in markets and towns in Oyo State. *Moinmoin*, on the other hand, is a steamed version of this cowpea paste and is also quite popular among the Yoruba. Because soaking and hulling of beans are required for most Yoruba bean dishes, cowpeas or beans are time-consuming to prepare. However, many Yoruba women say that it is worth their time and energy. Not only is it a taste that is preferred, many women recognize that cowpeas are "good for the body," especially for children (Nigerian fieldwork, 1996).

Soybean (Soya)

As incomes rise in developing countries, the demand for animal protein rises as well. However, for much of the world's population, animal protein is not a viable source of protein because of its relative scarcity and expense. Over 70% of the world's human protein currently comes from plant sources. Plants are in actuality a much more efficient protein source than are animals. It takes about 7 kilograms of protein meal to produce a single kilogram of livestock protein. It seems much more reasonable, therefore, to search for solutions to protein deficiency in the world's diet from plant rather than animal sources.

Increasingly, the search for an efficient, accessible, and affordable source of plant protein seems to be leading to the soybean, often called the "Golden Bean" because of its color and amazing characteristics (INTSOY, 1986, 4).

The soybean is believed to be native to north central China and has been an important crop in Asia for thousands of years. The first written record of the soybean was from the Chinese emperor in 2838 B.C. and is mentioned in other writings as one of the five sacred grains and as the most important legume. It has been used in the Orient mainly for seeds and for the preparation of many fresh, fermented, and dried foods. Others crushed the bean for oil, used it for industrial purposes and fertilizer, and as animal food (Caldwell, 1973). It has been historically known as "the meat of the fields" and has long served as a staple in many Asian diets (INTSOY, 1986).

In recent years, however, the soybean has been gaining more recognition and research funds in areas other than Asia because of its unique potential for decreasing the world's deficit in protein. The soybean yields more usable protein than any other cultivated crop, containing an average of 40% protein. Other widely-cultivated crops such as rice, wheat, and maize have only a third of the soybean's protein. Also, the soybean is an almost complete source of the nine essential amino acids in humans, with its only deficit easily complemented with maize, wheat or rice. In addition to containing a large percentage of protein, the soybean also a content of about 20% unsaturated oil, which is used largely in vegetable oils and other consumer products.

The cultivated soybean has been known by several botanical names, but in 1948 it was given the generally accepted botanical name of *Glycine max* (FAO, 1994). It has only been in this century that *Glycine max* has been produced to any great extent outside the

Asian realm. After being introduced to many regions of the world early in the century, it finally became a major crop in the United States in the 1940s. Since the 1970s Latin American countries have begun growing the soybean in world-market quantities. In most countries where it was introduced it was not originally produced as food for human consumption but as a source of animal feed. In 1941, for the first time, the amount of soybean being grown for other purposes exceeded that being grown for forage crop (Norman, 1978). Since the 1950s the cultivation of the soybean as an agricultural commodity has blossomed. It has been the fastest growing agricultural product in the past 40 years (Uri et al., 1993). From the 1970s to 1990 the area under soybean cultivation has increased 28% worldwide. In Brazil, one of the major soybean producers, the area harvested in soybeans has increased by 96% since the mid-1970s (Larson and Rask, 1992).

The boom in soybean cultivation has necessarily been accompanied by an incredible increase in demand. The demand for the soybean on the world market has almost doubled in the last 20 years, with about a 4 to 5% annual growth rate. In the United States, the world's leading producer, the production value is second only to corn and yielded farmers almost \$1.9 billion in revenue in 1991 alone. World soybean exports increased 300% from 1966 to 1990 while soybean meal exports increased by 700% over this same time period. Soybean is used in a variety of products from Pop Tarts to salad dressing, but its most important use is in vegetable oils where it has the biggest share of the market followed by palm oil and rapeseed oil. Soybean meal, on the other hand, is used primarily as animal feed. As demand for livestock and dairy products has increased, so has the demand for soybean meal.

Direct consumption of the soybean, however, has not caught on in many places where it has been introduced over the past century. Especially in the developing world where it is being touted as a meat substitute or high-protein additive in traditional foods, it is often resisted. In addition to all the reasons that new foods are resisted (as discussed in Chapter 3), the soybean is often rejected because of its "beany" taste. Furthermore, many people have complained that it is difficult to prepare without training or instruction. The "beany" taste is easily eliminated through cooking (Anazonwu-Bello, 1980). However, the problem of unfamiliarity with preparation techniques is less easily overcome. Nevertheless, many organizations in the developing world are directing much effort toward developing new recipes, cooking methods, and teaching techniques in order to encourage people to incorporate the soybean into their own traditional diets. Effective soybean campaigns have been successful in countries such as India and Sri Lanka where there is a high consumption of legumes due to poverty and religious restrictions on eating meat (Salunkhe and Kadam, 1989).

Soya Use in Nigeria

The soybean, or soya, which is not indigenous to Africa, was first introduced into Nigeria and Zaire in the early 1900s and into Zimbabwe in the 1920s. Since that time, interest in and production of soya have fluctuated in the African countries. In the 1950s and 1960s interest in soya as a cash crop grew and more recently interest has grown in its use for domestic purposes (Weingartner, Dashiell and Nelson, 1987). Compared to the major world producers, African production, however, is almost negligible. The greatest producer in recent years south of the Sahara has been Zimbabwe, which produced around 100,000 metric tons in the harvest year of 1992/1993. Nigeria followed as the second

largest producer with 80,000 metric tons in that same harvest year (Soya Blue Book, 1993). These countries and other fall within the "soybean belt" of Africa which ranges from Ghana in the west to Zimbabwe in the southeast. Eleven of the countries within this belt have shown interest in growing soya with their governments encouraging both use and production.

As early as the 1960s the value of soya was being recognized in Nigeria. Oyenuga (1968, 85) writes optimistically at that time, "Climatically West Africa would appear a suitable area for soybean production and the importance of the crop in commerce as well as its high nutritive value seem to justify the amount of labor and money that may be necessary in any determined attempt to increase production." Interest in the bean since that time has by no means diminished. Two organizations in particular are active in promoting soya in Nigeria. The first is the International Institute of Tropical Agriculture or IITA. Based in Ibadan, Nigeria, IITA developed several varieties of soya which are particularly suited to African environments. The second organization, International Soybean Program, or INTSOY, is based at the University of Illinois and operates in over one hundred countries throughout the world (INTSOY, 1986). The concentration of these organizations has been on the production and utilization of soya on the household and community level. Production, however, remains relatively low as does the yield per hectare. Area planted, yield per hectare and overall production have fluctuated greatly throughout the past two decades. Although accurate data are difficult to obtain in Nigeria, estimates have put production of soya as low as 1000-2000 tons in the 1970s and 1980s and as high as 200,000 tons. Yields per acre have been recorded as low as half a metric ton per hectare (Iyegha, 1988). Household use is increasing, as will be evidenced

in this study, but soya is still far from being a fully-accepted part of the traditional diet in Nigeria.

The Study Area

This research was conducted in the Ogbomoso zone in the Yoruba region of southwest Nigeria. Located in the savannah woodland region of Nigeria, the Ogbomoso zone consists of five Local Government Areas (LGAs) in Oyo State, Nigeria. Ogbomoso North and Ogbomoso South LGAs constitute Ogbomoso, a city of approximately 500,000 people. It is surrounded by the Orire LGA in the north, the Surulere LGA to the southeast and Ogo Oluwa LGA to the south (See Figure 4-2 for a map of the study area of the Ogbomoso Zone). The exact population of these LGAs is difficult to estimate as the number of LGAs has fluctuated widely since their creation in 1952. In Oyo State alone there have been anywhere from 12 to 53 LGAs over the past 20 years (Guyer, 1992).

The city of Ogbomoso is an economic and medical hub of the five LGAs listed above. It has traditionally had a great amount of contact with the outside world, especially with mission groups. The first mission groups in Yorubaland were the Anglicans and the British Wesleyans followed by the Southern Baptists, the first American mission group in Nigeria (Collins, 1993). The Southern Baptist mission holds a place of importance in Ogbomoso because of its long history with the city and because of its establishment of both a seminary and a hospital. The Nigerian Baptist Medical Center is one of the largest and most reputable in Nigeria. Although now completely in Nigerian administrative hands, it has one or more full-time missionary physicians on staff at any time as well as numerous visiting physicians from all over the world.

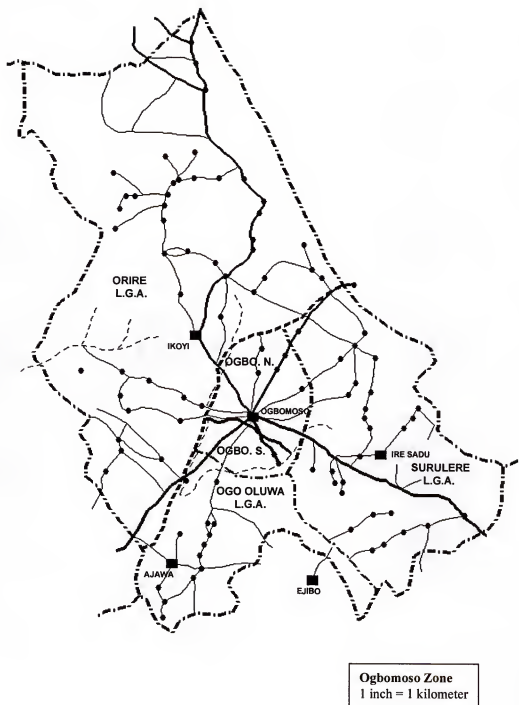


Figure 4-2: Map of the Ogbomoso Zone

The Ogbomoso Baptist Hospital provides prenatal and pediatric care as well as general and surgical health services. Associated in varying degrees with the hospital are Community Health, World Vision, and Kersey Children's Home. Community Health is a traveling clinic and nutrition program sponsored by the Baptist Hospital. World Vision and Kersey Children's Homes, with similar goals to that of Community Health, were integral parts of this research as will be discussed below.

Kersey Children's Home

Associated by history with the Baptist Medical Center is Kersey Children's Home, a clinic established in the 1950s by a Southern Baptist missionary, Ruth Kersey. Although Kersey was established as a home for abandoned, ill and malnourished children, it has become primarily a facility for malnourished children and their female caregivers. Because of the strong extended family system among the Yoruba, few, if any, children are ever truly abandoned. In the event of the death of a mother, a child's care is simply transferred to that of a female relative, such as a grandmother or aunt. The focus of the clinic, therefore, has been given over almost entirely to teaching female caregivers the basics of health, nutrition and sanitation. While immunizations and some basic health care is provided at Kersey, the main emphasis is nutrition. Kersey attempts to provide caregivers with long-term solutions, or lifestyle changes that will keep a child well-nourished and healthy.

When a malnourished child is brought to Kersey, they are regularly admitted as an inpatient for a month-long stay. Their primary female caregiver is told to bring her "load" or basic necessities such as clothes, sheets, and cooking supplies, and stays with the child during the entire month. During this time the woman is required to attend daily classes on

nutrition, preventative health, and sanitation. The women are responsible for preparing food for themselves and their children although soya-milk and other soya-foods are initially supplied to the child. Open air cooking areas, similar to the standard Nigerian "kitchen" are provided and women are taught to prepare nutritious foods while in residence.

The main focus of nutrition education at Kersey is on soya. Protein-deficiency, as discussed in previous chapters, is the most prevalent form of malnutrition in Nigeria, particularly among infants and young children. Because children are often weaned too early, mainly because of subsequent pregnancies, newly weaned babies are likely to have diets lacking in protein. Furthermore, this is a critical stage in a child's life as new foods, which are commonly unsuitable, unsanitary or nutritionally deficient, are introduced into an infant's diet. Studies have shown that only 1% of Nigerian women exclusively breast-feed during the first six months of life, one of the most nutritionally crucial and vulnerable times (Huffman and Martin, 1994, 134). Because of this breast-feeding trend, a suitable supplement or replacement for breast-milk is desperately needed in Nigeria. Soya milk has proven to be an excellent, affordable substitute or supplement. Other soya foods such as soya cheese are promoted at Kersey as substitutes for scarce foods such as meat. In addition, women are encouraged to simply add soya to traditional dishes such as amala, akara, and soup in order to increase the protein content.

World Vision in the Ogbomoso Zone

The World Vision program began in 1989 in Nigeria. It was first proposed to be set up in the city of Ilorin and partnered with a religiously-affiliated hospital in that area; however, the hospital decided against the partnership in the final stages of negotiations.

Ogbomoso Baptist Hospital was then approached as a possible partner because of its good reputation and strong community health outreach programs. For the first year after setting up in Ogbomoso, World Vision conducted extensive baseline surveys and began to establish a working relationship with the local governments in the Ogbomoso Zone. The started providing services to the most underserved areas of the zone in 1990 with the cooperation of local governments.

World Vision operated in the Ogbomoso Zone with cooperation from the local government and Ogbomoso Baptist Hospital; however, the majority of the operating funds actually came from the United States government. They were given grants to work on three-year projects and re-evaluated at the end of each three-year period. After a mid-project evaluation in 1992 they were approved for a year-long extension in both 1994 and 1995. In 1996 the grant was terminated because of sanctions against Nigeria's military regime and its human rights violations. Nevertheless, World Vision was able to provide a budget of \$13,000 for a final year using a scaled-down staff. They were able to retain 13 of the 30 staff members for the 1997 year during which they would basically turn over the program to local governments and community health centers.

The termination of the World Vision program was traumatic for World Vision staff members, Community Health Workers and Nutrition Promoters and for World Vision villages. Although the local governments were being groomed to take over the program, many workers and clients expressed grave concerns over the transition. Part of the concern comes from a deep, justified mistrust of the government, both federal and local, within Nigeria. Two specific reasons for distrust of the local governments were expressed by villagers and staff members alike. The first area of contention was the recent changes

in local government areas. Nigeria has a history of constant re-delineation of state and local government boundaries. In 1996 the Ogbomoso Zone had recently been divided into five local government areas from the original one. Entire towns commonly resisted cooperation with their new local governments, even if cooperation was to their obvious benefit. For example, in one town with a serious guinea worm problem from unclean drinking water, World Vision and the new local government planned to finance and dig a new well. Nevertheless, on the day that the well was to be dug the villagers showed up to protest because it was the "new" government instead of the "old" one involved.

The second area of distrust for the turnover to local governments was based on past history of corruption of local politicians. One villager described how a vehicle donated to the his local government community health program had been commandeered by the chairman of the local government. Bicycles and other donated supplies had likewise been "transferred" into other hands with local health posts never deriving any of the benefits. Despite World Vision's concerted efforts to facilitate a smooth transition, once the program was dismantled there would effectively be no checks on the program except for the village and community counsels.

World Vision staff members, on the other hand, had both community and personal concerns relating to the shut-down of the World Vision office in Ogbomoso. They of course expressed concern that their efforts would end in futility if the local governments did not effectively carry on the program. However, because of the severe economic climate in Nigeria in 1996 they were also deeply distressed about their own future well-being. One of the upper-level staff members indicated to me that her salary at World Vision was presently 30,000 naira per month, about \$375 U.S. dollars. This was

equivalent to what the average worker was making on a yearly basis at that time; therefore, the hopes of matching this salary through any other work in Nigeria was doubtful if not impossible. Although 13 staff members were staying on for another year, their time with World Vision was swiftly approaching an end as well. All World Vision staff were frantically trying to locate other employment or find investment money to start their own clinics or pharmacies. Many were imploring any non-nationals, such as myself, to help them gain entrance into the United States or obtain a loan.

These concerns over closing aside, World Vision was still operating during my fieldwork in 1996. For its six years of servicing the Ogbomoso Zone, it delivered services very similar to those provided by Kersey. The main difference between the two clinics, both entirely staffed by Nigerians, is that World Vision provided a "traveling" clinic in villages within the Ogbomoso Zone. Each site was visited once a month and clinics were held in which children were given well-baby checks and immunizations and mothers were taught about nutrition, sanitation, and illness prevention. The methods of teaching of song, dance, and "audience participation" were similar to those used at Kersey and at Community Health.

Research Methodology

For any research project there are numerous ways in which a research question may be approached. The goals, purpose, setting and type of research should inform the methodology used (Coffey and Atkinson, 1996). For this particular research of food habits in a developing-world country, I have primarily used a qualitative approach to the study. One of the main reasons for this choice is that this study has an underlying practical question and purpose that must be guided by reality and not merely by theory: "Is it

possible to change food habits for nutrition and health purposes in one particular developing world community? If so, how can this be done?"

Often in qualitative research, as opposed to quantitative research, one begins with a research question and little else. No general theory guides or informs the research before it begins. In inductive research, a researcher begins with detailed observations of the world and then moves toward more theoretical generalizations and ideas (Neuman, 1997). It is a method of building "grounded theory" or building theory from the "ground up." In grounded theory, the goal is to develop concepts as the research unfolds (Layder, 1993). To reach this goal, the qualitative research employs "a systematic set of procedures to develop an inductively derived theory about a phenomenon" (Strauss and Corbin, 1990, 24).

The purpose of grounded theory is to build a theory that is true to the evidence. Grounded theory and inductive research are based on the idea that social worlds must be "discovered" (Layer, 1993). In this type of qualitative research, "analysts make problems, grounding them in the everyday realities and meanings of social worlds and social actor, rather than taking problems from policymakers, general theorist or others" (Coffey and Atkinson, 1996, 5). Inductive research also uses micro-level events to create macro-level explanations. Specific events are researched in order to "gain insight into the larger dynamics of a society" (Neuman, 1997, 334). This should not suggest, however, that qualitative or inductive research is any less rigorous than other types of research. Like positivist-oriented theory, it should be capable of replication and should be generalizable. Qualitative research has been championed for the valid, precise, and reliable data that it can produce (Glaser and Strauss, 1967).

Like methodology, purposes of social research vary widely and are informed by the type and setting of the research. Social research can be divided into three main types: exploratory, descriptive and explanatory. Although a single research project may have multiple purposes, most have a dominant purpose. The goal of exploratory research is to investigate a subject that is relatively "new" and has had very little written about it. Often in exploratory research the goal is to simply discover exact questions to be answered in future research. Descriptive research seeks to illustrate and characterize a certain situation, culture, or relationship. This is perhaps the most common type of research and can be useful in not only furthering understanding of a particular culture or problem, but is often helpful in policy-making. Explanatory research is often conducted in situations in which an issue has been characterized or described but still needs to be fully explained. Its goal is to discover underlying processes, build, extend or determine the accuracy of a theory or simply elaborate on existing explanation. It often includes, or is built upon, exploratory or descriptive research (Neuman, 1997).

This study is primarily descriptive and explanatory in nature. The basic goal of this study, as in all research, is "to advance fundamental knowledge about the social world" (Neuman, 1997, 21). In addition, it has an applied nature in that it will provide information for policy-makers and practitioners in health campaigns and social-marketing of dietary changes, particularly in Nigeria. Although it is cross-sectional research and basically provides a "snapshot" picture of a problem at one particular time, historical or cohort analysis was also used in an attempt to show changes in food habits over time in southwestern Nigeria. Cohort analysis is a process in which a category of people who shared a similar life experience in a specific time period are observed or interviewed

(Neuman, 1997). To this end, interviews were conducted with several older women who described the changes in Nigeria over the past two decades, especially in relation to food and farming patterns.

Ethnographic Research

Ethnographic research is the process of learning from and describing a culture. Spradley (1979, 5) defines culture as the "acquired knowledge that people use to interpret experience and generate social behavior." The goal of the ethnographer is to understand the cultural scene from the point of view of the "insiders" or culture-bearers. It is like being taught as a child is taught (Gladwin, 1989). Ethnography is a method of helping the researcher to understand "what the world is like to people who have learned to see, hear, speak, think, and act in ways that are different" (Spradley, 1979, 3). This does not necessarily preclude the use of a prepared survey, but can be used either to develop or augment a questionnaire.

In the past 30 years ethnography has become increasingly important in the social sciences, particularly in fields such as medicine and education (Layder, 1993). It provides a systematic method in which research can discover how culture-bearers see their own world rather than how a researcher sees their world. Ethnographic research and decision-tree modeling, as will be discussed below, allow for systematic analysis of research problems and for the formation of a model that is "testable" (Gladwin, 1996). In the realist tradition, an explanatory model of underlying processes is developed, based on ethnographic research, in order to account for empirical observations (Mason, 1996).

The Ethnographic Interview

The first phase of this study consisted of conducting 52 lengthy ethnographic interviews with women in the Ogbomoso zone of southwest Nigeria. The majority of women chosen for interviews were ones who had children under the age of five. In some cases older women were interviewed in order to gain historical perspective regarding changes in social structure, farming methods, gender relations, and food habits. An effort was made to interview women who had, and those who had not, utilized missionary-founded clinics such as Kersey Children's Home, internationally-funded clinics such as World Vision and locally-supported clinics such as Community Health. Interviews were conducted with 19 women who had attended Kersey Children's Home, 17 with World Vision clients and 16 with women who had not utilized any clinic at all. Some of these women had used more than one clinic, including Community Health.

A general preliminary questionnaire was used as a guideline during these interviews, but not strictly adhered to. The purpose of an ethnographic interview is to guide the conversation so that the person being interviewed can share the information most important to her. Each interview began with a very general "grand tour" question such as, "Tell me about a typical day for you." (See Figure 4.3 for general topics covered in initial ethnographic interviews.) The informant was then encouraged to expound on specific details or points of interest as the interview unfolded as suggested by Spradley (1979). As each interview continued, questions became more detailed. As much as was possible, questions were couched in "native" Yoruba terminology as it was important for the woman being interviewed to hear familiar, everyday language.

"Typical Day" Questions:

- What kind of work do you usually do each day?
- What kinds of responsibilities do you have concerning your children?
- What kind of work do you usually do on your farm?

Farming Questions:

- What do you grow?
- What does your husband grow?
- Do you farm separately or together?
- What do you plant in the different seasons?
- What foods do you buy and what foods do you grow?
- How do you decide what to buy and what to grow?

Food Questions:

- What kinds of foods would you prepare and eat on a typical day?
- Do the children and the adults eat different foods?
- Who makes the decisions about what foods your family will eat?
- Are there any foods that your family will not eat?
- Are there any foods that the adults won't eat? The children?

Soya Questions:

- Do you ever buy, grow, eat or prepare soya?
- If so, what foods do you prepare with soya?
- Do you add it to foods or use it as a replacement for foods?
- Where did you first hear about soya?
- What made you first decide to buy, grow, eat or prepare soya?

Illness/Malnutrition Questions:

- Have any of your children been sick lately?
- Can you describe the symptoms of your child's sickness?
- What was the first thing you did when your child became sick? The second?
- Who usually makes the decisions about what to do about a sick child?

Figure 4-3: General Topics Covered in Initial Ethnographic Interviews

Sampling

Sampling is the process in which a researcher systematically selects persons or "cases" to be included in a research project. Sampling is necessary in almost all research in that it is often impossible to interview or study an entire pool of possible cases or an target population. The target population is simply the group of people or cases that a researcher wants to study. There are many ways to choose a sample of the target population for study. In general, these can be divided into non-probability and probability sampling. A researcher uses one or the other depending on the research topic, the time and money available and any other extenuating circumstances (Hessler, 1992).

Two sets of sampling took place in this study. The first sample taken was for the lengthy ethnographic interview in which I was gathering the emic data from both clinic and non-clinic users. The second sample was chosen as respondents to the surveys generated out of the ethnographic interviews and participant observation. For both samples, non-probability sampling methods were used. Although samples based on probability theory are preferred and more powerful in terms of quantitative methods, in some cases, especially in qualitative ethnographic research, non-probability sampling is acceptable (Neuman, 1997). In this study, purposive and snowball sampling was used. Purposive or judgmental sampling is the sampling process in which the researcher selects cases or persons with a specific purpose in mind. It is often used in exploratory or field research. It is appropriate in several different situations. In this study, purposive sampling was appropriate because the persons were members of a specialized, difficult-to-reach population (Nachmias and Nachmias, 1987). Since there is no list generalized list of all the women in the Ogbomoso zone who use health clinics that promote soya, and no lists

for "adopters" versus "non-adopters" I was forced to use the available information, both written and verbal, to locate members of the target population. This type of sampling is particularly appropriate in ethnographic field studies in which lengthy interviews will be conducted (Neuman, 1997).

For interviews with either Kersey or World Vision clients, I attempted to locate and interview women who were apparent soya adopters and those who were not. Soya adopters were defined in this study as those women preparing or buying soya two or more times a week. In many cases, I determined apparent adopters through Kersey and World Vision records and based on the knowledge of the clients by clinic workers. At other times, I simply determined the level of soya use during the lengthy interview. Some of these women were interviewed at Kersey when they returned for check-ups or in the villages when the World Vision team held clinics. Others were located through the use of clinic records and interviewed in their own home or village within the Ogbomoso zone. This was primarily accomplished with the help of a 30-year veteran worker of Kersey Children's Home. Snowball sampling, in which an original group links the researcher to other potential cases, was also used as at times one woman would "lead" me to another to whom she was connected.

For sampling of non-clinic users and final survey informants, I again used purposive sampling, but with an attempt to sample a geographically varied group from within the Ogbomoso zone. After obtaining a local government map of the area, I divided the zone into four geographically equal quadrants. I also used a World Vision map in addition to help identify areas that have definitely been exposed to health and nutrition campaigns. Villages from each of these quadrants were visited in addition to the city of

Ogbomoso itself. Villages were chosen that were in approximately the same location as clinic participants so that some comparisons could be drawn and so that similar geographic patterns would exist between the users and non-users. The goal was to locate non-users who might have had equal opportunity to utilize the clinics but who have chosen not to do so.

Within the villages and within the city of Ogbomoso, I identified women who were members of my target group--women with children under the age of five who were both clinic-users and non-users, soya-adopters and non-adopters. Women with older children were sometimes included for additional information on traditional diets and nutrition strategies. Again, these women were identified through a variety of sources including Kersey and World Vision records and workers, Community Health workers, and the women within the villages through snow-ball sampling.

Participant Observation

Participant observation has been described as the process of observing and behaving as one would in any new situation (Spradley, 1979). It also involves establishing a relationship with a community (Bernard, 1988). Participant observation requires a researcher to not only watch the people and activities of a cultural scene, but also to actively engage in the appropriate activities of the culture. In doing the everyday activities, the researcher is able to record and describe the "actors," the setting, and the process (Spradley, 1980).

In this research I was able to become a participant observer in several different settings. The first and most indepth observation occurred as I lived with a Yoruba family in the city of Ife, the cultural center of Yorubaland. I lived with this family for six weeks

and was able to participate in cooking, meals, family gatherings and other social interactions. The family consisted of a young mother and father and their two children, Olumide, age four, and Yinka, age two. Although this family was relatively well-off and definitely better educated than the average Nigerian, they in many ways reflected the normal customs, familial relationships, and current hardships of other Yoruba families. The interactions of the wife with the husband and the parents with the children were particularly useful to my understanding of status and power within the average Yoruba family and informed the remainder of my research.

I was also able to observe and participate in the clinic setting and village activities once my formal research began in the city of Ogbomosho. I spent many days a week in Kersey Children's Home talking with the nurses and caregivers, watching the children and mothers interact, observing classes being taught and participating in soya cooking classes. I was also able to spend several days with the staff and administrative personnel of World Vision. I attended several of their training sessions for village health workers, visited villages with them where they conducted classes, and spent time in the World Vision office talking with staff members. I was able to have similar experiences, although to a more limited degree, with the Community Health office based in the Baptist Hospital in Ogbomosho.

Decision-Tree Modeling

Decision-making processes of individuals within a culture are of importance to food habits studies. In this particular research, the main goal was to discover the constraints and motivations of women in decision-making processes concerning health and nutrition issues, especially as they relate to children in the household under the age of five.

Decision behavior is critical from a policy standpoint because "decision making occurs at the interface between cognition and action, where what people think affects what they do" (Gladwin, 1996, 6). Analysis of decision-making allows the researchers to understand constraints and motivations on an individual basis, but should also allow for a composite analysis of any particular decision-making process, such as the decision to use or not to use soya.

Decision trees are models based on emic data, or data drawn directly from the culture-bearers in their own terminology. Each reason or motivation for taking a particular action, as well as each constraint, is placed in a sequence or "tree." Each of the criteria must be "passed" along a path to arrive at a particular outcome or choice. In this study, the particular decision being studied was that of preparing soya/not preparing soya and of growing soya/not growing soya for Yoruba women in and around the city of Ogbomoso.

A decision tree was created for each individual based on ethnographic interviews and personal observations. These trees were used as a tool to constantly reevaluate the ethnographic interview process. Once all ethnographic interviews were completed, all decision trees were combined to create a composite decision tree. Each component of the composite decision tree then became a question of the final survey. (See Appendix A for the final survey). The final survey was then used to test the model on an entirely new sample of women. Ideally, the composite decision tree is revised as research proceeds and retested when possible. In this research, an initial composite decision tree was created and then tested on a sample of women. It was then checked for errors and reconfigured to best reflect the actual decision-making process.

Each woman from the testing sample was taken through the final decision tree to determine if it could be accurately determined whether or not she would or would not be an "adopter" of soya. For instance, if a woman indicated that she did prepare soya for her family 2 or more times a week, she was considered an "adopter" in this particular research. During the initial questions of the final survey it was determined whether or not she was an "adopter." Each woman who was an "adopter" should have continued through the composite decision tree reaching the final stage of "use soya twice or more a week." If she was not an adopter, she should have exited the decision tree at some point because of a constraint. Errors occurred when the outcome for a particular individual was not correctly predicted by the composite model. For instance, if an informant "passed" all the motivations and constraints to adopting soya in the decision tree but in reality had not adopted soya, she was considered an error. This of course does not mean that her decision was in error, but that the composite decision tree simply failed to predict her choice.

Acceptable composite models should correctly predict the outcomes of 85-90% of the informants tested. Perfect prediction is suspect as it suggests that the model is, in fact, too simple (Gladwin, 1996). The composite model in this research correctly predicted over 90% of the decisions made by the informants. The errors were carefully analyzed to provide further understanding of the decision-making process.

Limitations of the Methodology Used

As is the case in any fieldwork, there were several limitations to the methodology used in this research. First of all, in qualitative methodology, especially ethnography, it is critical to be able to communicate effectively with informants. Although I spoke and

understood Yoruba reasonably well, I was nevertheless hindered by my lack of complete conversational abilities. Almost without exception, the staff members of Kersey, World Vision, and Community Health all spoke perfect English as it is the official language of Nigeria; however, I was limited in my ability to speak at length with most villagers who spoke no English. Although I used very competent and fluent translators, problems in translation and interpretation are almost inevitable. I combated many of these problems by using a second translator during the transcription of many of my interview tapes. Furthermore, while lack of fluency did not hinder me from participating in clinics and by observing actions, it undoubtedly did affect my full comprehension of activities and conversation.

In addition to language problems in the field, my presence as an "oyinbo" (the "peeled one") in settings in which there are never "Europeans" or whites, was disruptive at times. The chaos, confusion, and excitement that surrounded my arrival in a village or meeting at times precluded the observation of any normal activity. Nevertheless, I attempted to glean any understanding from every situation. As Kleinman and Copp (1993) point out in Emotions and Fieldwork, even "wahala" (the Yoruba term for chaotic situations) can provide insights on the culture that is invaluable. Toward this end, I took precise fieldnotes, recording my observations, conversations and personal impressions so that I could best interpret every situation and interview.

Conclusion

Using the ethnographic methods described in the previous sections, I modeled the decision of Yoruba women in the Ogbomoso Zone to either prepare soya twice a week or not to prepare soya twice a week. The following chapter will present the composite

decision tree for soya adoption and explore in detail the major motivations and constraints to its preparation and consumption in Yoruba households in the Ogbomoso Zone.

Analysis will be based on the 50 initial ethnographic interviews with informants and the 70 surveys taken in the final stages of research. Chapter 6 will then use information gathered through ethnographic interviews, surveys, and participant observation to explore the larger cultural themes affecting not only soya adoption by Yoruba women in the Ogbomoso Zone, but also health and food decisions in general.

CHAPTER 5 CONSTRAINTS AND MOTIVATIONS TO SOYA ADOPTION IN THE OGBOMSO ZONE OF SOUTHWEST NIGERIA

The Changing Fortunes and Responsibilities of Women in Yorubaland

Women in Nigeria have long been participants in income-generating activities. According to some historians, Nigerian women have been active market traders since at least the 18th century (Osirim, 1997). Today, most Yoruba women from very early in life until very late in life participate in trade and have a substantial role in providing financially for their families. Almost every woman is involved in trade to some degree, depending usually on her age, the number and ages of her children, and her position within the household (Sudarkasa, 1973). Yoruba women are known for their entrepreneurial savvy and aggressive capitalism. They customarily control their own businesses and have even formed powerful women's organizations. The *esusu* rotating credit schemes, for example, have been critical in allowing women to institute and sustain their own business ventures (Trager and Osinulu, 1991; Osirim, 1997).

In general, all Yoruba women who are wives and mothers also have responsibilities as income earners. Yoruba women, however, typically do not consider their roles in work to be contradictory to their roles within the household. Economic pursuits are just one of the many facets of a Yoruba woman's duties in providing for her household. Furthermore, trading and business are important forms of social activity among Yoruba women. In addition, socialization of children in Yorubaland is closely tied to their mothers'

involvement in economic activities (Sudarkasa, 1973). As Osirim (1997, 161) stresses, even in pre-colonial times, Yoruba women's "roles as mothers, workers, and wives were interdependent."

Historically, Nigerian women have been disproportionately poor. They have commonly held positions of lower status than men inside and outside of the household, although age and circumstance can affect the seniority of both men and women in Yorubaland (Sudarkasa, 1986). The situation of women worsened during the colonial years as the colonial government "institutionalized a gender-based division of labor" by creating cash-cropping opportunities expressly for men (Osirim, 1997, 162). As men devoted their time to cash-cropping, women's work loads increased as they took over some of the men's duties at home, such as subsistence farming. Some studies show that before this time Yoruba women typically were not farmers and rarely took part "in any phase of agriculture" (Sudarkasa, 1973, 1). In general, farming has been "men's work," although women in some areas of Yorubland have typically worked on farms more than women of other areas (Bascom, 1969, 20). Customarily the Yoruba woman's job has been processing agricultural goods in order to make them marketable and then actually marketing the goods. In recent decades they have begun to take over more responsibility for growing foods that are used within the household and marketed locally.

Most women today participate in some farming tasks whether they have their own farm or farm with other family members. A study conducted in Oyo State found that 100% of the women in the Savannah area of the state participated in farming and that 73.5% of those women had their own personal farm. However, it must be noted that all

of these women farmed land that was obtained from their husbands. None of the women surveyed actually owned or rented the land on which they farmed (Olawoye, 1988).

The Yoruba Woman and Structural Adjustment in Nigeria

As difficult as the colonial years might have been for Yoruba women, the past decade of structural adjustment programs within Nigeria has also been difficult for several reasons. First of all, women entrepreneurs are facing even greater problems of lack of access to capital and training than they have in the past. Although women are growing more crops than ever before, their efforts are typically viewed as part of their "housework" and so are largely neglected by agricultural planners and extension agents (Olawoye, 1988). Secondly, because many men have been displaced from their formal sector jobs, women are now competing with men in the same arena -- small business and trading (Trager and Osinulu, 1991). Furthermore, because of the economic hardships brought on the entire country by austerity measures, women are forced to take on more responsibility in order for their families to survive. Financial assistance from urban-dwelling husbands and other family members is more unreliable than ever because of government budget cutbacks and wage freezes. Women, especially those in the rural areas, therefore, are often being looked to by family members for financial support (Osirim, 1997). Although the structural adjustment program in Nigeria is purportedly geared toward increasing agricultural production, and some benefits may eventually reach women farmers, this will depend in large part on what types of agriculture are supported (Guyer and Idowu, 1991). The high producer prices of export crops due to the depreciation of the naira, for example, has been a powerful force in attracting farmers away from food crops and toward export crops. Because most smallholders in Nigeria only have a limited amount of money to

invest in agriculture, investment in export crop production inevitably means a decrease in investment in food production (Okuneye, 1988).

The Yoruba Household

One of the distinct characteristics of the average Yoruba household is that men and women conduct their financial lives, for the main part, independently of each other. As Sudarkasa (1986, 181) noted, based on her research of Yoruba women traders in 1961, "Husbands and wives managed their business affairs separately, kept separate purses, and contributed separately, though in cooperation, to the maintenance of the household." This custom holds today as well. Women are commonly responsible for providing for the necessities for themselves and their children. Most women interviewed indicated that they take care of basic foods, primary health care, and school fees. The husbands, on the other hand, occasionally supplement their wives' incomes when necessary and purchase foods such as meat. They also generally help with finances in health-care emergencies. However, women in polygamous marriages often assume more responsibility for their own children as the husband's finances are divided among many households. Furthermore, husbands with many wives frequently live apart from some or all of their wives, making procuring financial help from the husband difficult.

The financial independence of Yoruba women is in part illusion. Although most women interviewed claimed to have autonomy in how they spent their own money, few could make the same claim for household funds. Most women interviewed admitted that their personal money went toward securing food and supplies for themselves and their children. One study from a village in Oyo State found that the women made two main types of decisions: investment-based and operational. When women performed jobs which

required operational decision-making that was within their range of "competence," they were allowed much freedom in decision-making. However, in decisions that required a monetary outlay, the women either had no input or very little (Williams, 1984).

The same situation is true in many farming decisions in Yorubaland. Studies from across Africa generally show that the amount of food women grow determines how much food is available to the family (Olawoye, 1988). However, in Yorubaland, men often control decisions not only on the commercial or family farm, but also on the women's farms. For example, Olawoye's (1988) study in Oyo State found that in 93.6% of the households surveyed, men exclusively made the decision about what to grow on the family farm. In the remaining 6.4%, the man and woman made the decision together. Even on women's personal farms, only 14.8% of the women exclusively made the decision about what to grow. This affects not only a woman's financial resources, but also the type and amount of food that she is able to make available to her family. Furthermore, as men become involved in cash-cropping or wage labor, women typically have to make up for the male non-wage-labor on the family farm. As many of the duties of Yoruba women fall into the category of unpaid labor, new responsibilities added to a woman's workload often decrease the amount of time available to women for money-making enterprises.

Although it has been noted that Yoruba women are not likely to be "bullied" by their husbands, women's decision-making powers are limited in health and nutrition issues as well as in financial ones (Sudarkasa, 1986, 181). Numerous women when asked who made the decision about what to eat each day responded, "My husband decides." Elabor-Idemudia (1991) reports that in most instances Nigerian men alone make the decisions concerning what crops to plant and sell, the way in which the joint income is spent and

whether of not to building a house or have a baby. Concerning health care, they often said that their husband or his family made the important decisions, such as whether or not to take a child to the hospital in the city. Even when the husband is absent, his family rather than the wife typically makes the decisions concerning intensive care of the sick in the household in Oyo State (Williams, 1984).

Decision-Making Among Yoruba Women in the Ogbomoso Zone

The above discussion sheds light on some of the potential problems that Yoruba women now face in providing for their families. Especially in polygamous households or households in which the husbands live away from their nuclear family, women are assuming more and more responsibility for the survival of their children. Financial help from extended family is less reliable than ever as well. Women in Yorubaland are being forced to make difficult decisions regarding their time, money, and resources without the additional power that they need to make these difficult decisions. The traditional patriarchal and patrilocal system is still strong, hindering a woman's autonomy in most decision-making that affects family resources or funds. This chapter explores the general aspects of decision-making in any society and the food choices of Yoruba women in particular, illuminating both the motivations and constraints that Yoruba women of the Ogbomoso Zone commonly face in the adoption of a "new" food into the family diet.

Decision-Making

The process of decision-making, regardless of the magnitude of a decision, is quite often a complex and poorly understood process. There seems to be no true agreement on the nature of knowledge and how it is used in the process of decision-making (Schank and Abelson, 1977). However, individuals generally must consider, either consciously or

subconsciously, the reasons for making a particular decision and then also the constraints to making that same decision. A person often has multiple reasons or motivations for taking a certain action; however, it takes only one constraint, on the other hand, to preclude that action. For example, a woman may plan to seek health care for a sick child at a specific local doctor for several reasons. These reasons might include: the doctor's office is the nearest of the doctors in town, the doctor is a family friend, the staff is courteous and efficient, and the cost of the doctor is affordable. Any one of these reasons might be a satisfactory motivation for seeking that particular doctor's care. Nevertheless, if the woman does not have adequate transportation to reach the doctor's office, she may decide that she cannot go. A single constraint can override all the motivations for taking this particular action.

The purpose of decision-tree modeling is to create a logical sequence of motivations and constraints that might influence a certain decision. As mentioned previously, these motivations and constraints are elicited from many informants in lengthy interviews. The informants tell in their own words the reasons why they did or did not take a certain action. In other words, they express the reasons why they made a particular decision.

A number of informants' interviews are utilized in creating the composite decision-tree for several reasons. First of all, no two persons' decision-making processes are exactly alike and the goal is to create a generalized model of a particular decision-making process. Secondly, individuals can often clearly articulate their own reasons for making a decision; however, very few people can give a full accounting of *every* aspect of even their own decision-making process. Small details or mitigating factors may be unintentionally,

or even intentionally left out when an informant is interviewed by an "outsider." For example, using the scenario above, a woman may not take her child to the doctor because her husband forbids her to spend the money. However, she may be unwilling to admit that this factor played a part in her decision-making. When creating a composite decision-tree, a number of idiosyncratic decision criteria are combined to create generalized criteria. For example, one woman may say that she did not take her child to the doctor's office because her car broke down while another may say that the buses were not running on the day she needed to go. Both of these constraints could be placed under the general criteria of "did not have transportation to the doctor's office." While use of emic data or the exact language used by each informant is important, it is also critical to combine decision criteria in order to create a workable, simplified model.

Prepare Soya/Don't Prepare Soya

Determining the exact decision-making process to model can be the most critical, but often most difficult, aspect of decision-tree modeling. In this research, the decision modeled will be that of: Prepare soya twice a week or more/Don't prepare soya twice a week or more. The overall purpose of this model is to ascertain why women did or did not "adopt" soya. Adoption is "a decision to make full use of an innovation as the best course of action available" (Rogers, 1983). The phrase "full use" can leave room for a great deal of ambiguity, especially in the adoption of a new food in a traditional society. In the Yoruba society, as mentioned in previous chapters, the diet has on the whole changed very little throughout history (Bascom, 1969). Although some foods have been added to the diet, very few staple foods have been replaced except in times of food shortage. Many staple foods, such as yam and cassava, are eaten on a daily basis with

very little variation. Data from this research and others in Oyo State indicate that basic yam, cassava, and corn dishes are classified as the "most commonly eaten foods" (Adeyeye, 1989). Many informants in this research reported that they ate the same dish for the same meal everyday except for some seasonal variation. This means that any newly-introduced food competes with staple foods in a culture with deeply-rooted food traditions. "Full use" in this sense means that a food is eaten on almost a daily basis. On the other hand, partial adoption, meaning that a food is *ever* eaten, has important implications in such a tradition-bound society.

Adopters and Non-Adopters

In this research, a theoretical line had to be drawn between those people considered "adopters" and those considered "non-adopters." There were two main issues to address: (1) whether the decision-tree would be based on the consumption or the preparation of soya, and (2) how many times a week a woman must utilize soya to be considered an "adopter." First of all, I determined that the decision to be modeled would be that of preparing soya, not simply consuming soya. This determination was based on the fact that in the present economy most women prepare staple foods for their family either from crops they have grown on their farm or purchased at the local market. Staple foods such as *eyan* (pounded yam) and *amala* are generally not even available already prepared. The "fast" foods commonly offered for sale already-prepared are snacks or refreshments called *epanu* in Yoruba. These include foods such as puffpuff, roasted maize, and groundnuts. Therefore, it can be assumed that any staple food intended for the entire household, and not just as a snack, would most often be prepared at home. While soya milk and soya cheese are available in many areas, especially in larger cities and

market-towns, interviews indicated that those women feeding their families soya on a regular basis were preparing soya as opposed to buying it in edible forms such as cheese and milk.

The second decision to be made before creating the composite decision-tree was that of how many times a week a woman needed to prepare soya in order to be considered an "adopter." According to some definitions, *any* selection or choice of soya could be considered adoption. However, for this research I wanted to find the decision criteria for women choosing soya on a regular basis either as an additive to traditional foods or as a main ingredient in foods like soya cheese. Initial interviews and surveys indicated that women preparing soya most often did so more than once a week and usually in several different forms. Surveys indicated that of those preparing soya twice a week or more, 80% prepared two or more different foods with soya. Of those preparing soya less than twice a week, 90% did not prepare soya at all. Therefore, the data themselves were used as a determinant for classifying "adopters" and "non-adopters." Nevertheless, it must be stressed that the terms "adopter" and "non-adopter" used in this research are specific to this study only and based on my own classification criteria as discussed above.

The Composite Model

The composite model of the decision to prepare soya twice a week/don't prepare soya twice a week is based on the ethnographic interviews of 52 women in the Ogbomoso Zone in southwest Nigeria. This composite was created from individual decision-trees based on these interviews. (See Figure 5-1 for an example of an individual decision tree and Figure 5-2 for the composite decision tree).

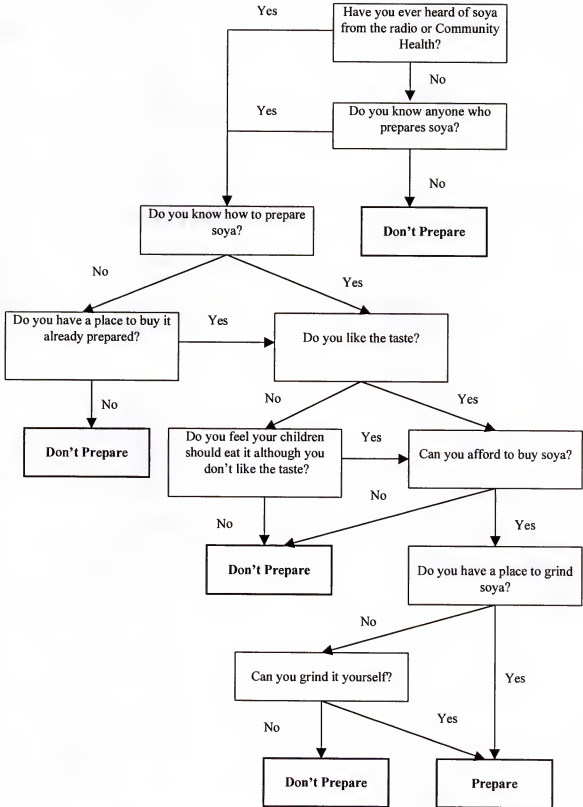


Figure 5-1: Individual Decision Tree - Prepare Soya Twice a Week/Don't Prepare Soya Twice a Week

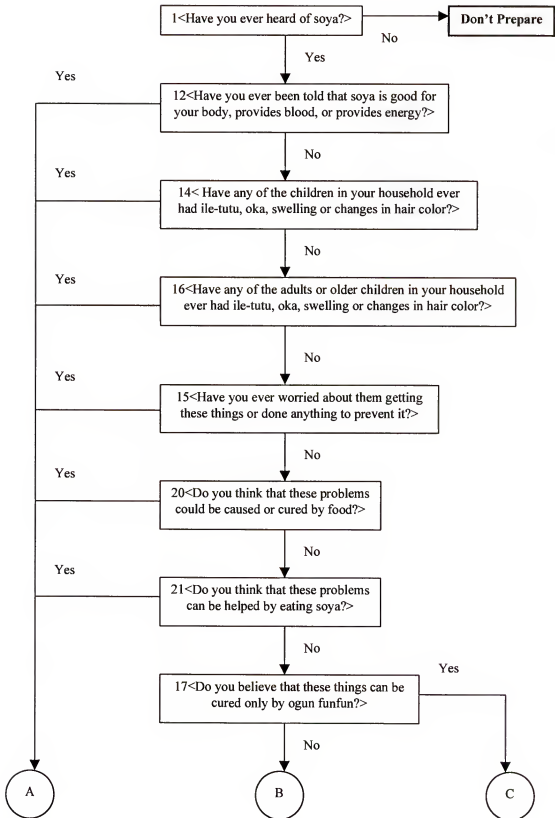


Figure 5-2: Composite Decision Tree - Prepare Soya Twice a Week/Don't Prepare Soy Twice a Week

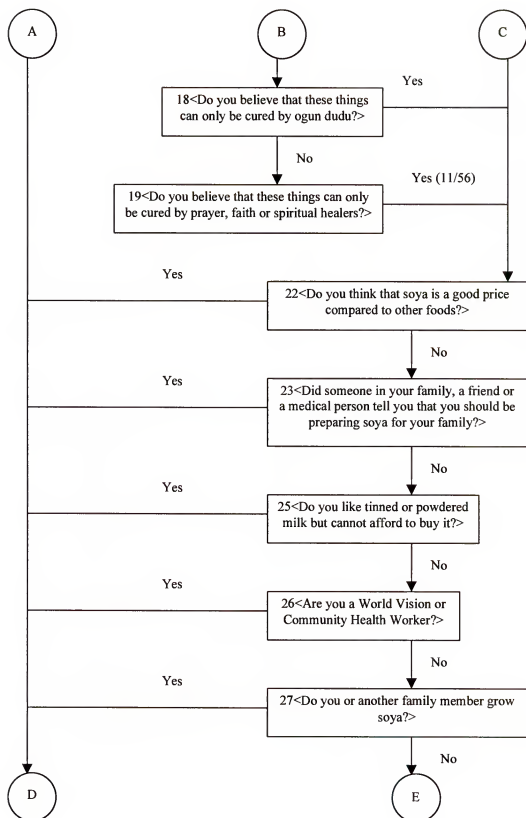


Figure 5-2 (Continued)

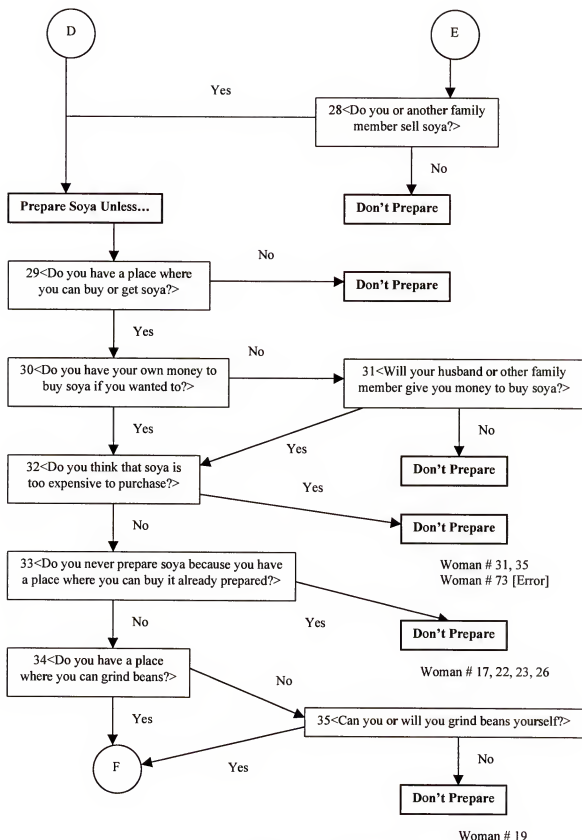


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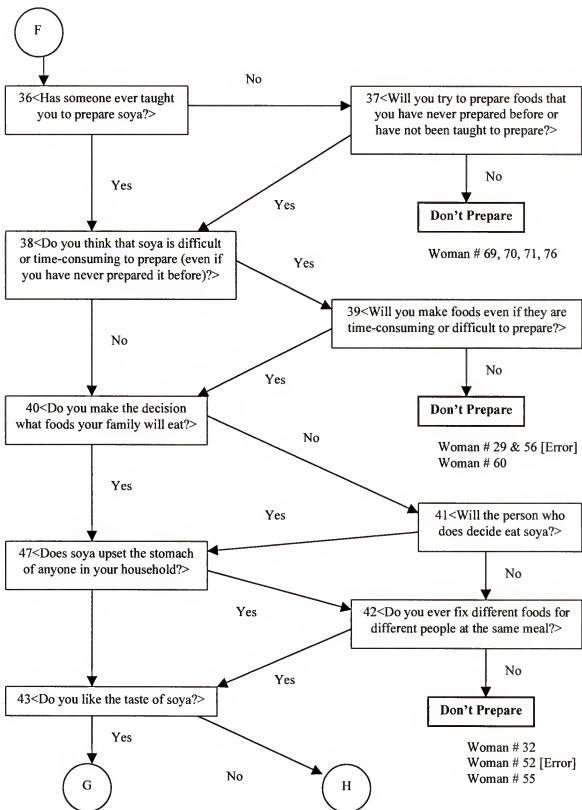


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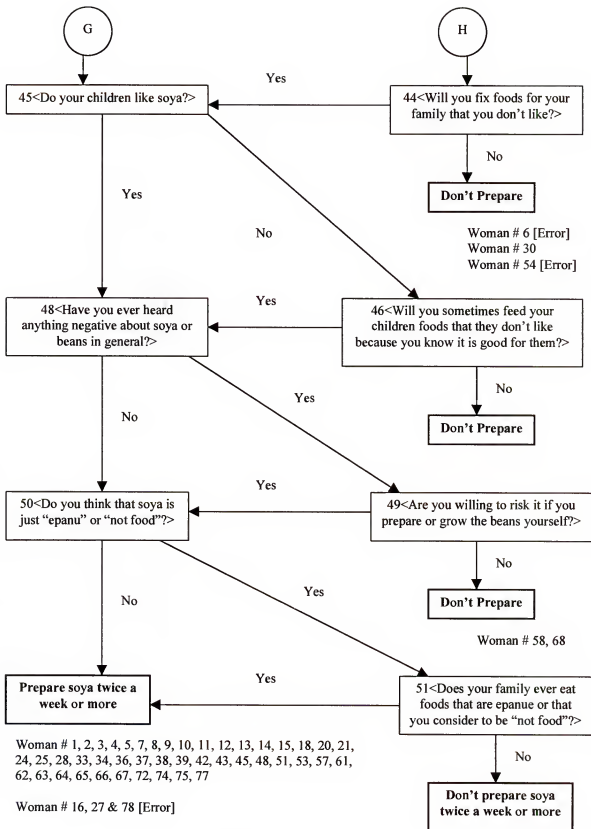


Figure 5-2 (Continued)

The final model, embodied in the questionnaire (Appendix A), was tested on a sample of 10 women, reconfigured, then tested on the final, completely new, sample group of 78 informants. The decision tree is divided into two sections. The first section contains the reasons or motivations for adoption of soya. A woman must have at least one motivation for adoption or she will "exit" the decision tree as a non-adopter at the end of the section. If she does have one or more motivations for adoption, she moves onto the "constraints" section which begins at "Prepare Soya Unless." If any constraint in this section applies to a particular woman, that woman will "exit" the decision tree at that point as a non-adopter. However, if she "passes" every constraint, she will arrive at the outcome "Prepare soya twice a week or more." In other words, she will be an adopter. Each motivation and constraint of the composite decision tree corresponds to a particular question on the survey, as indicated by the numbers preceding each point on the tree.

Of the 78 surveys gathered, eight were determined to be lacking in sufficient information (Women #40, #41, #49, #50, #51, #59, #60 and #73) and were removed from the sample, leaving 70 final test-cases. Of this sample, 50 women prepared soya twice a week or more while 20 did not. Of the 70 informants "taken through" the model, 9 were "errors." In decision-tree modeling, an error occurs when the model does not successfully predict the decision of an informant. In this study, an error occurred when the model either predicted that a woman would be an adopter, but in actuality was not or the model predicted that a woman would be a non-adopter, but in actuality she had adopted. The model correctly predicted 61 of the 70 informants decisions, giving the model an 88% success rate. (See Tables 5.1 and 5.2.) This falls within the 85-90% success rate deemed adequate for a generalized model (Gladwin, 1996).

Table 5-1: Results of Decision-Tree Analysis

Number of Women Who Prepare Soya Twice a Week or More	50
Number of Women Who Do Not Prepare Soya Twice a Week or More	20
Number of Women Who Buy but Do Not Prepare Soya	4
Number of Women Whose Outcomes Were Not Successfully Predicted by the Decision Model in Figure 5-2	9
Number of Women Who Were Adopters but Were Predicated by the Decision Tree Model to be Non-Adopters	6
Number of Women Who Were Non-Adopters but Were Predicted by the Decision Tree Model to be Adopters	3
Success Rate of Decision Tree Model	88%

Table 5-2: Responses to Composite Decision Tree Survey Questions

Survey Question	No. "Yes"	No. "No"	% Yes	%No
1. Have you ever heard of soya?	66	0	100	0
12. Have you ever been told that soya is good for your body, provides blood, or provides energy?	64	3	95.5	4.5
14. Have any of the children in your household ever had ile-tutu, oka, swelling or changes in hair color?	20	46	30.3	69.7
16. Have any of the adults or older children in your household ever had ile-tutu, oka, swelling or changes in hair color?	7	59	10.6	89.4
15. Have you ever worried about them getting these things or done anything to prevent it?	58	6	90.6	9.4
20. Do you think that these problems could be caused or cured by food?	51	9	85	15
21. Do you think that these problems can be helped by eating soya?	55	6	90.2	9.8
17. Do you believe that these things can be cured only by ogun funfun?	12	43	21.8	78.2
18. Do you believe that these things can only be cured by ogun dudu?	9	49	15.5	84.5
19. Do you believe that these things can only be cured by prayer, faith or spiritual healers?	11	45	19.6	80.4
22. Do you think that soya is a good price compared to other foods?	58	8	87.9	12.1
23. Did someone in your family, a friend or a medical person tell you that you should be preparing soya for your family?	61	6	91	9

Table 5-2 (Continued)

25. Do you like tinned or powdered milk but cannot afford to buy it?	21	41	33.9	66.1
26. Are you a World Vision or Community Health Worker?	9	56	13.9	86.1
27. Do you or another family member grow soya?	38	23	62.3	37.7
28. Do you or another family member sell soya?	21	43	32.8	67.2
29. Do you have a place where you can buy or get soya?	67	0	100	0
30. Do you have your own money to buy soya if you wanted to?	62	4	93.9	6.1
32. Do you think that soya is too expensive to purchase?	5	60	7.7	92.3
33. Do you never prepare soya because you have a place where you can buy it already prepared?	38	28	57.6	42.4
34. Do you have a place where you can grind beans?	56	2	96.5	3.5
35. Can you or will you grind bean yourself?	47	9	83.9	16.1
36. Has someone ever taught you to prepare soya?	53	4	93	7
37. Will you try to prepare foods that you have never prepared before or have not been taught to prepare?	15	38	28.3	71.7
38. Do you think that soya is difficult or time-consuming to prepare (even if you have never prepared it before)?	34	23	59.7	40.3
39. Will you make foods even if they are time-consuming or difficult to prepare?	44	11	80	20

Table 5-2 (Continued)

40. Do you make the decision what foods your family will eat?	33	33	50	50
41. Will the person who does decide eat soya?	56	3	94.9	5.1
47. Does soya upset the stomach of anyone in your household?	6	56	9.7	90.3
42. Do you ever fix different foods for different people at the same meal?	19	45	29.7	70.3
43. Do you like the taste of soya?	59	6	90.8	9.2
44. Will you fix foods for your family that you don't like?	9	55	14.1	85.9
45. Do your children like soya?	62	3	95.4	4.6
46. Will you sometimes feed your children foods they don't like because you know it is good for them?	41	22	65.1	34.9
48. Have you ever heard anything negative about soya or beans in general?	30	35	46.1	53.9
49. Are you willing to risk it if you prepare or grow the beans yourself?	60	5	92.3	7.7
50. Do you think that soya is just "epanu" or "not food"?	23	42	35.4	64.6
51. Does your family ever eat foods that are "epanu" or that you consider to be "not food"?	65	0	100	0

Analyzing a Composite Decision Tree

For analysis purposes, a composite decision tree can be used in several different ways. First of all, the points at which non-adopters "exited" the tree at certain *constraints* can be analyzed. For example, four women exited the tree at the survey question concerning knowing how to prepare soya. In other words, four women did not adopt soya because of the constraint of not knowing how to prepare it. Secondly, the *errors* in a decision tree can be analyzed to not only show how the model failed, but to illuminate the cases in which the decisions of women are basically "unexplained." The possible decision criteria of these "unexplained" decisions can be analyzed for a further understanding of this decision and foodways in general. Last of all, general *cultural themes* can be explored based on fieldwork and the resulting composite model. Because each motivation and constraint in the model are based on the composite of many different informants, this provides a foundation or outline for exploring general themes in the foodways of Yoruba women. These generalized themes are often applicable to larger health issues as well.

The following sections will be guided by the three methods of analysis outlined above. This chapter analyzes the "constraints" of those women who made the decision not to prepare soya and explores the errors of the model, what they imply about the decision-making process, and how they might be corrected in further research. Chapter 6 provides a general analysis of the cultural themes that surfaced during the informants' interviews, participant observation and analysis of the composite model.

Motivations for the Adoption of Soya by Yoruba Women

Individuals must have sufficient motivation in order to make any significant change in their lifestyles, especially diet (Lentz, 1991). In fact, individuals or households often

have several motivations or reasons to change rather than just one. However, a single constraint can prevent change from occurring. In this study, several motivations and constraints to the adoption of soya were identified through lengthy ethnographic interviews. During these interviews I found that every woman had heard of soya from either friends, family, hospitals, health clinics or agricultural extension services. In fact, most women stated emphatically that they believed that soya is "good for the body," "provides blood" or "provides energy." Others went on to explain the particular benefits of soya to children. Many stated that they believed soya can help prevent or cure *ile tutu*, the common Yoruba expression for malnutrition which means "cold land." In the final surveys of 70 women, 100% of the women reported that they had heard of soya, had been told that it was "good for the body" and were concerned about their children getting *ile-tutu*. Furthermore, 55 of the 66 women who responded, or 83%, believed that *ile-tutu* and its related symptoms can be helped by eating soya.

Although all women surveyed indicated that they possessed motivation to adopt soya simply from a nutritional aspect, many also indicated other motivations for adoption. For example, 59 of the 67 women who responded, or 88%, indicated that they believed soya was a good price compared to other foods. In addition, 68% reported that they are never able to afford tinned or powdered milk or only on rare occasions although they like these products. Because fresh dairy products, other than occasional cheese sold by Fulani, are unavailable in Yorubaland, tinned and powdered milk are the only form of dairy accessible in the area other than soya milk. The desire for milk substitutes, especially for children being weaned, can be a strong motivating factor for the adoption and preparation of soya milk.

In addition to the health and economic aspects of soya adoption is that of community responsibility. As will be discussed in greater detail in Chapter 6, the mobile clinics in this study both used community participation to encourage the adoption of soya. Both World Vision and Community Health encouraged the formation of health committees in each village that they serviced. These committees, usually composed of the chief of the village and other respected elders, helped organize village health clinics, build village health posts, and stimulate interest in health matters among villagers. Although these committees were most often entirely male, they were of critical importance in setting the "stage" for cooperation and interest among the women of the village. In addition to the committee, however, who took a less "hands-on" role, Community Health Workers and Community Nutrition Promoters were commonly enlisted from each village. These workers had roles that varied from organizing clinics to stocking and operating the village health post between clinic visits. Despite the varied roles, however, the common factor among committee members and health workers was that they had a vested interest in the success of the program. This personal interest and time-investment virtually ensured their adoption of soya and other good-health practices. Many of these men and women expressed the belief that because of their health "position" within the village they were obligated to use and promote soya. Most workers believed it to be critical to set a good example; therefore, being a community leader often provided sufficient motivation for soya adoption.

A final area of motivation for many women interviewed concerned the growing and selling of soya. Of all respondents, 38 of 67 women indicated that they or someone in their household grew at present and 23 others had grown soya in the past. In addition,

32% presently sold soya. Furthermore, during interviews most women reported that their household ate some of everything that they grew. This suggests that growing or selling soya provides a strong motivation for consuming soya. As soya becomes more in demand at the market, the number of women growing and selling soya will increase, providing increased reason to use and prepare soya at home.

Constraints to the Adoption of Soya by Yoruba Women

In spite of the plethora of motivations for Yoruba women in the Ogbomoso Zone to adopt soya, the constraints to its adoption are compelling as well. The constraints to adoption are located at question 29 of the composite decision tree and found in the section called "Prepare Soya Unless". Many of these constraints are logistical, such as lack of access to grinding facilities for soya. Other problems include lack of access to money to buy soya, usually based on the household system of money allocation. One of the major constraints expressed during the preliminary interviews was that many women, although familiar with soya in general, did not know how to prepare soya and were unwilling to risk "trial and error" in its preparation. Related to this is the constraint of time and effort required to prepare soya.

In the composite decision tree, 23 generalized problems are identified as constraints to the adoption of soya by women in the Ogbomoso Zone. All informants "passed" the motivation section of the tree by identifying at least one reason for preparing soya. In most cases, women identified more than one reason to prepare soya. However, 20 of the 70 informants did not adopt soya. Fifteen of those twenty "exited" the tree at a particular constraint, while the remaining five non-adopters "passed" through the entire tree without exiting at any constraints. These five cases are "errors," signifying that

although no constraints to preparing soya were identified, the informants nonetheless chose not to prepare it. The composite model, therefore, failed in these cases to articulate the particular constraints that prevented these women from preparing or adopting soya. The following section will identify the constraints that women most often reported as critical to their decision not to adopt soya, discussed in the order in which they are presented in the composite decision tree.

"Soya is too expensive to purchase"

Three women of the 70 surveyed indicated that they believed that soya was too expensive to purchase (Question #32 in survey). Two of these three were non-adopters and one was an adopter who nevertheless exited at this constraint, making this case an "error." Although these women reported to believe soya too expensive to purchase, in a previous question (#22) all three of these women reported that they believed soya was a good price compared to other foods. How can these discrepancies be accounted for? There are two possible answers to this. The first possible explanation for this seeming contradiction is that the women surveyed simply misunderstood one or both of these questions. Although based on emic data -- cultural terms used by Yoruba women themselves in previous interviews -- these questions might have been worded in a vague or confusing manner. Furthermore, it is possible that the interpreter asked the questions with slight variations from one informant to the next.

The second possibility, which based on interviews and observation I believe to be the most likely, is that some women found soya to be a good price compared to other foods, but still believed that it was too expensive for them based on their personal prioritization of food purchases. As the economic situation worsens in Nigeria, women

consistently report that they are unable to purchase food items that they have bought in the past or that they would like to buy. Because of extremely limited budgets women may believe a price on an item to be reasonable as compared to other items, but still not affordable in terms of their own budget. In other words, food purchases must be prioritized. If a food is deemed too low on the list of priorities, it will not be purchased for household consumption. In difficult economic times, even essential food items may be eliminated (Elabor-Idemduia, 1991).

The issue of priority and categorization of foods arose frequently during interviews. The first indication of this generally-accepted food categorization surfaced when an informant mentioned something that she had eaten that day, but proceeded to say that it was *ko kuno*, which in Yoruba literally means "does not fill the stomach." However, it is also commonly used to mean that a food is "not really food." Another Yoruba term used for food that is not "real" food but is simply "snack food" or "refreshment" is *epamu*. The classification of food as *epamu*, however, did not appear to be based on nutritional value. Quite to the contrary, many foods with the highest nutritional value, such as groundnuts which are extremely high in protein and fruits which are high in a number of vitamins and minerals, were commonly listed by both men and women as *epamu*. The classification seemed to be based in part on its ability to fill or satiate an appetite and on the time of day and situation in which a food would be eaten. For example, since fruit is not generally eaten as part of meals in Yorubaland, it is "not really food." It is more frequently consumed between meals, much as any snack would be. A comparative food in the United States might be popcorn. Although generally nutritious, popcorn is not usually eaten as part of a meal nor is it considered filling enough to be a

meal in and of itself. It is more commonly eaten between meals or connected to certain activities such as watching television or a movie.

When asked if they considered soya to be *epanu*, 23 of 65 women reported that they did classify it as such. However, 100% of that number also said that their household consumes *epanu*. Therefore, no one "exited" the tree or chose not to adopt soya, according to this survey, based on the classification of soya as *epanu*. Of the three women who believed soya to be too expensive to purchase, all three classified it as *epanu*, but also reported that their household does buy and consume *epanu*.

Another classification of foods common in Yorubaland may also have an impact on the priority that foods are given by Yoruba women. This is the classification of foods as "heavy" or as "light." Heavy foods are those staple foods that have central importance in the Yoruba diet and while they are not always eaten more frequently than other foods, they are considered to be the most filling. For example, pounded yam, or *eyan*, was reported by women in interviews to be a "heavy" food and an undeniable favorite among the Yoruba people, but is often in scarce supply during the dry season. *Amala*, a staple food made from dried yam flour and *eba*, a staple food made from cassava flour, were also most frequently listed as "heavy" foods. As one woman said, these heavy foods are "for the farm." Farmers, she asserted, would not eat beans and rice on the farm because they "do not fill the stomach."

Many foods were commonly reported to be "light" foods. These included rice, beans, meat, eggs and *pap* (corn cereal). These foods are staple foods that are generally liked and eaten on a regular basis within Yorubaland. Moreover, many of the "light" foods are high in protein and generally nutritious; however, these foods are considered to

be "not filling" and are eaten "with food." As one woman said, meat is "used for food" but is not food by itself. The same appeared to be true of *efo* (greens). These foods one "cannot eat alone." Therefore, the main distinction between the two categories appears to be their ability to "fill" and whether or not they can be eaten as the central dish in a meal. The heavy foods of *eyan*, *amala*, and *eba* are all very starchy foods that are similar in texture and used to "scoop" other foods such as soup. Meat and greens, on the other hand, would be side items or foods that would be combined with other foods in soups or stews.

The distinction between "real" and "not real" and "heavy" and "light" foods is of consequence in the adoption of soya because soya was generally considered *epamu* and never reported to be a heavy food during this study. Since heavy foods were without exception preferred over light foods, soya's classification as a light food (except when used as an additive in heavy foods such as *eyan*), lowers it to a position of lesser priority within most households. Soya's position as an "extra," less-filling food could account for that fact that although some women considered it to be a good price compared to other foods, it was still deemed "too expensive" to purchase.

"I never prepare soya because I can buy it"

As a general rule, no food in the Ogbomoso Zone that is considered to be an integral part of the diet or meals is offered for sale as a prepared or "fast" food. The foods most commonly sold by traders or street vendors are roasted maize, groundnuts, puffpuff, fried yam, akara, bread and pre-packaged foods such as soft drinks and "biscuits" (crackers). In larger cities such as Ogbomoso, pre-made *eyan* or *amala* is not available for purchase except on a pre-arranged basis with a "caterer." In villages, although there

may be a communal pounding of yam or processing of yam flour, there are no sellers of pre-made staple foods. A number of factors can account for this. First of all, with the economy as it is, most people cannot afford to purchase already-prepared staple foods on a regular basis. Secondly, many households grow their own staple foods and women routinely process these foods themselves. Pounding yam, for example, is a traditional chore for Yoruba women and is often done communally, providing a forum for socialization. As one study confirms, processing of foodstuffs in Yorubaland is considered by most women to be a form of relaxation (Sudarkasa, 1986). Pounding yam is such an integral part of an average Yoruba woman's life that it is often said that a woman's age can be determined by the development of her shoulder muscles that are most directly involved in the act of pounding yam. Processing food, like trading, is a traditional and enjoyable activity for most Yoruba women and would not easily be relinquished for convenience sake alone.

Since the social marketing of soya began in earnest in the 1990s, the availability of pre-made soya foods has grown as well. Soya milk and soya cheese (also called soya meat) are now frequently sold in cities and towns of Oyo State and the Ogbomosho Zone in particular. Many of the early traders in soya foods, in fact, were connected to Kersey Children's Home and now World Vision and Community Health. After soya was introduced to the director of Kersey in the early 1980s, the clinic sent a worker, now fondly called Iya Soya (Mother Soya), to IITA in Ibadan to learn to cook and prepare soya. She was one of the first women to be trained in its preparation and was instrumental in teaching others in the Ogbomosho area. As Yoruba women are historically traders and entrepreneurs, Iya Soya soon turned her new-found skill into a money-making pursuit.

She sold soya milk and soya cheese as a sideline business for many years and then finally left her job at Kersey in 1995 to pursue full-time selling of soya. One of her main sources of customers have been patients at Ogbomoso Baptist Hospital as it is commonly "prescribed" by doctors there for children who are malnourished or are recovering from illness or surgery. Families must furnish meals for patients as food is not provided as part of the hospital stay. Therefore, the availability of "fast" foods close to the hospital is a great need as many persons have traveled long distances to receive care.

Soya foods, nonetheless, are now sold elsewhere other than at hospitals and clinics. Many women, even in small villages, reported purchasing already-prepared soya foods such as milk and cheese from local women. Some traders of soya foods, especially those that are Community Nutrition Promoters or Community Health Workers with either Community Health or World Vision, see this as a service to others who need soya. However, the main motivation appears to be economic. As soya has grown in popularity and the economy has worsened, soya foods are more in demand. As one male soya farmer enthusiastically exclaimed, "A person can become a millionaire by selling it in the market now, but three years ago it was not lucrative." Many believe that growing and selling soya is an opportunity for financial growth and even fortune. Soya milk and cheese are especially in demand as soya milk is often used instead of the much more expensive tinned or powdered milk and as soya cheese can be used as a meat substitute. Furthermore, foods made solely from soya are much more difficult and time-consuming to prepare than those foods which simply have soya flour added to them, such as soup or pounded yam.

Only four of the 70 women surveyed indicated that they purchased soya foods on a regular basis rather than prepared them. Although this might be considered "partial"

adoption, the decision studied in this research is on preparation. As discussed above, although soya foods are available for purchase in many places, they are by no means universally offered for sale across Yorubaland or on a regular basis in most rural villages. Therefore, true adoption is unlikely to take place based on the purchase of prepared soya foods. In addition, soya is more likely to be utilized as an additive to or substitute for other foods than it is to be prepared as a single-ingredient dish. Interviews, observation and survey information show that people are more likely to use soya as a substitute for more expensive foods such as the melon seed *egusi* or as an additive because it has been recommended for health purposes. The taste, smell, and odor are still unfamiliar enough that few Yorubas are likely to purchase pure soya foods for taste preference alone.

"I do not have anyone to grind soya for me and will not grind it myself"

Virtually no village in the Ogbomoso Zone is without access to a grinder. Furthermore, most women are accustomed to grinding some beans for themselves. Therefore, grinding of soya is less of a problem than might have initially been expected. Only one survey respondent indicated that grinding soya is a problem. Fifty-six of the fifty-eight women who responded reported that they did have a place where they could have soya ground whether or not they actually did so or not (see Questions #34 and #35). If grinding facilities were not available, many women indicated that they were willing to grind it themselves as they did so with other foods. This is an aspect of utmost importance as all women surveyed noted that they purchased the soya bean as opposed to already-ground flour. The reason for this choice appears to be twofold. First of all, flour is much more expensive to purchase since very few women yet consider soya as a daily part of their diet they are unwilling to spend the additional money for the convenience.

Secondly, it is not commonly available as flour. Although a very small number of people buy it and take it to the grinder to sell in small "letters" or paper packets, in general people were not selling soya as flour. Sixty-nine of the seventy women reported that they bought soya as beans, rather than as flour.

"No one has taught me to prepare soya"

The major thrust in the promotion of soya in Oyo State has undoubtedly been teaching women to prepare soya. In a society where the bulk of the diet consists of foods prepared at home, teaching women to prepare soya has been critical to its adoption. The success of this promotion is evident in the survey numbers from this research. Only four women, or 7% of the women surveyed on this issue, reported that they had never been taught to prepare soya. When asked if they would prepare a food that they had never prepared before and that no one had taught them to prepare, 72% of these women indicated that they would not, supporting the prevailing emphasis on soya preparation.

This percentage of women never having been taught to prepare soya is relatively low and indicates success on the part of the programs in the Ogbomoso Zone in teaching soya preparation. However, when one considers that 20 of the 70 persons surveyed were non-adopters and that 4 of those 20, or 20%, did not adopt because they did not know how to prepare soya, this number gains in significance. In other words, not knowing how to prepare soya is actually a major constraint to its adoption.

There are three main ways a woman might learn to prepare soya in the Ogbomoso Zone of Yorubaland. The first means is through the clinics, hospitals and organizations in the area. Kersey Children's Home is the oldest and most well-established of the "soya clinics", but others have made great inroads in teaching its preparation. World Vision and

Community Health both reach a number of women in their traveling clinics. All three of the major organizations in the Ogbomoso Zone which promote soya focus a great deal of attention on teaching women to cook soya. Kersey Children's Home, World Vision, and Community Health all devote some of each visit or each nutrition class to soya preparation. Kersey has also published a small soya cookbook that is available to clients. Many churches and women's groups have also become involved in the soya crusade. One large church in Ibadan which encourages vegetarianism has been particularly active in teaching women to prepare soya.

The second means of learning to prepare soya is through friends or relatives. According to informants, many women learn to prepare soya in the less formal setting of home or village instead of in clinics. Because soya preparation is typically taught through song and dance, most women can easily remember and pass on soya preparation techniques to other women, regardless of their level of education. Some women, especially those that are Village Health Workers or Community Nutrition Promoters, are eager to pass on their new-found skills to the women around them. Several former Kersey patients happily recounted that they taught many women in their village how to prepare soya once it was evident to others that their once-ill child or children were now thriving. Interviews with numerous women whose children had gotten well after visiting Kersey or one of the other clinics provided vivid illustrations of the power of success as the best teacher and motivation for adoption of health innovations.

The third means of learning to prepare soya is through personal initiative. Informants indicated that the motivation for learning to prepare soya in Nigeria, even if one has not been taught or encouraged to do so, is that it is a better price than cowpeas

and *egusi*, the melon seed used in many soups. This most commonly is done through "trial and error" but can also be accomplished through the use of one of the many soya cookbooks now available in Nigeria. (See Appendix B for examples of soya recipes). Some books, such as those created by IITA, are simple and straightforward in approach. The IITA cookbook (1990), available in both English and Yoruba, explains the benefits of consuming soya and provides traditional recipes using soya as an additive or replacement food. Another cookbook written by a pastor's wife from Iboland takes a much different approach. While many of the recipes are similar to those in the IITA cookbook, this book is written in pidgin English and couched in culturally-familiar terms.

There are advantages and disadvantages to the "social marketing" of soya through literature. The advantage is that, as mentioned above, it provides a means for women to teach themselves to prepare soya. Furthermore, these small cookbooks are actually just leaflets and are relatively inexpensive to produce. Many are simply photocopies that have been stapled together in book form. Women frequently receive them from the clinics and can take them home as a guide for future soya preparation and may pass them one to other women. Other booklets may be distributed at churches or women's meetings.

There are disadvantages to this form of marketing and teaching, however. First of all, many of the "bush" women have no formal education and cannot read either Yoruba or English. Secondly, these books are at times a source of confusion as there are a plethora of ways to prepare a single soya dish. For example, soya milk is most often "prescribed" for children being weaned although it is often the most difficult soya food to prepare. It is time-consuming and laborious as it generally requires soaking, cooking, and straining of soya beans. One of the greatest problems, however, is that soya can be prepared in

different ways. For example, five preparation methods for soya milk have been recommended by IITA (Ogundipe, Dashiell, and Osho, 1989). During interviews and observation of soya preparation, I found that the steps and procedures in making soya milk have almost infinite variations. Some clinics advocate soaking overnight while others stress that the beans can be ground raw and used for soya milk without preliminary soaking or cooking. I experienced great frustration in attempting to discover "the way" to prepare soya milk. I eventually found that there was no single way. There are distinct taste and time advantages and disadvantages to each different preparation method. These variations can be useful in providing alternatives for women depending on the time and effort they are willing to commit to soya preparation, but they can also be frustrating for many, especially those who have been led to believe that "incorrect" soya preparation can have deleterious effects.

"Soya is too time-consuming to prepare"

Many of a Yoruba woman's daily chores are especially time-consuming as access to modern conveniences is lacking, even in most urban households. Much of what is eaten in a rural Yoruba household is grown, processed, and prepared by the females in the family. The harvesting and processing of the staple foods, yam and cassava, are particularly difficult and time-consuming. A study in Oyo State found that while women ranked the jobs of child care and household maintenance as the most important of their socio-economic responsibilities, trading and farming took the most hours in an average day. Women in Oyo State indicated that 13% of the hours of the day were spent farming, 16% trading, 8% housekeeping, 8% taking care of children and 6% processing food.

Approximately 53% of a woman's day was spent working as compared to 45% for men (Adeyeye, 1984).

Because many of the tasks that Yoruba women are responsible for are so time-consuming, the priorities of a wife and mother may differ significantly from the amount of time spent working toward those priorities. This may explain the divergence between a mother's concern for her children's health and her willingness to take steps toward improving their health and nutritional status. Although 100% of women surveyed indicated that they had been told at some point that soya was good for the body, provided blood, and gave strength, many still chose not to prepare soya for a number of reasons. One of the major constraints as evidenced in the composite decision tree is that many women felt that soya was too time-consuming to prepare. As a Nigerian publication on soya states, "The main reason for the little use of soyabeans as food in Nigeria is the difficulty of cooking the beans. For this reason, soyabeans are therefore not popular as food in Nigeria." (Soyabeans in the Nigerian Diet, 1985).

In the testing of the composite decision tree, 60% reported that they felt soya was time-consuming to prepare; however, 80% of the women reported that prepared other dishes that they considered to be difficult and time-consuming to prepare. (See Questions # 38 and #39). Three women of the 70 surveyed, felt that soya was time-consuming and difficult to prepare and did not ever prepare dishes that they felt required too much time and work to cook. Therefore, these women "exited" the composite decision tree at this particular constraint. Two of these three outcomes were "errors," meaning that although these women indicated that this was a constraint to preparing soya, they did so twice a week or more anyway.

Several reasons might account for the difference in some women's willingness to prepare soya in spite of the time and work it requires in preparation. First of all, the motivation for some women is undoubtedly stronger than that of others. While all women surveyed indicated that they had been encouraged to use soya, some of these women have more immediate reasons for adoption, such as a sick or malnourished child. Any innovation requires a necessary and perceived need in order to be adopted by any individual, especially where concerted time and effort are required for adoption. This perceived need is without doubt stronger in some women than in others (Laogun, 1991). Other needs, such as the need to farm and trade for income, often override the need to prepare soya for the family.

A second reason for the reluctance of some women to prepare soya is based on the realities of soya utilization in Nigeria. Soya is most often sold and purchased in bean form rather than flour form, as discussed in an earlier section. Preparation of the soyabean, like that of other beans, is perceived as significantly more time-consuming than the preparation of many other staple foods. Of the women surveyed, all indicated that bean dishes were the most difficult to prepare. Most beans, including soya, require some soaking, cooking, dehulling, and grinding before they can be used in traditional Yoruba dishes. Although yam and cassava also require significant time inputs for preparation, they are often purchased in flour-form or are commonly processed in a communal manner.

Soya cheese and soya milk are the most frequently "prescribed" soya foods for malnourished or sickly children. These high-protein soya foods often replace foods that are generally unaffordable to most women. Soya cheese, for example, is used as a substitute for meat and soya milk for tinned or powdered milk. Forty-one of the 68

women who responded, or 60% of the women, reported that tinned milk was too expensive for them to buy and 4 of the 68, or 6%, indicated that they could only purchase it occasionally. Therefore, although it is less laborious and more expedient to simply add soya to traditional dishes than to prepare it as cheese or milk, many women prefer soya as a substitute food. This preference may be based on the economics of using it as a substitute food, but also on the fact that children, especially those being weaned, may require soya in milk form.

The problem with soya cheese and milk is that they are undeniably time-consuming to prepare, especially for a novice. Some women interviewed complained that soya milk required a process that began at night and ended the next morning. Women also bemoaned the fact that the final cooking of the soya milk had to be done early in order to have it ready for the first feeding of the day. Furthermore, unrefrigerated soya milk will stay fresh for only 24 hours, requiring women to repeat the process daily. IITA and others working with soya adoption in Nigeria recognize this constraint and have devoted great amounts of research time and money to overcome the problem. IITA, for example, offers five common ways to prepare soya milk (Ogundipe, Dashiell, and Osho, 1989). Kersey staff workers promote "easier" methods of soya milk preparation that require no soaking and less cooking time. Many recipe books provide several alternative methods for convenience (Agugo, 1995). The method chosen frequently depends on the taste and gastro-intestinal sensitivity of the individual preparing the soya food. Foods made from raw beans, for instance, have been known to bother the stomachs of some individuals; however, depending on the amount of soya used in a dish, this may or may not be a problem (Soybeans in the Nigerian Diet, 1985).

"The person who decides what we eat does not like soya"

Of the 70 women surveyed, 50% indicated that they were not the ones who made the decision as to what to feed their family. Husbands most often made the decision, followed by senior wives. Therefore, even if a woman had many reasons to prepare soya, she might be constrained from doing so if her husband or the senior wife did not like soya (see Questions #40 and #41). Twenty percent of the women indicated that this was the case in their household. There was, however, an alternative action built into the decision tree that might help a woman overcome these constraints. During the ethnographic interviews some women reported that while someone in her household did not like soya, she would make adjustments in preparation to allow for this. One woman, for example, said that she prepared pounded yam for the entire family, but would add soya only to the portion given to her child. In other cases, women would add soya to everyone's food but her husband's if he objected to the taste. Therefore, although 3 of 59 women reported that someone in their household did not like soya or and 6 of 62 women indicated that it upset someone's stomach within their household, they were willing to fix different foods for different people at the same meal in order to overcome this constraint.

Three women "exited" the decision tree at this constraint. Two women indicated that soya was disliked by the person in the family who decided what to eat and one reported that it bothered the stomach of someone in the house. These three women were unwilling to prepare different foods at the same meal and therefore "exited" the decision tree at this point. One of these outcomes, however, was an "error" meaning that although she reported that soya upset someone's stomach in her household and she was unwilling to prepare different foods for different people at one meal, she prepared soya twice or more a

week anyway. This could be explained by the status of that person within the household if he or she were not in a decision-making position concerning diet. Also, the person might simply avoid the food made with soya or "risk" eating it despite its negative effects. However, the survey did not elicit the details and the error is therefore unexplained.

"I do not like the taste of soya and will not fix foods that I do not like"

Individual food preferences, as discussed in previous chapters, can be based on a host of factors ranging from personal likes and dislikes to cultural norms (Fallon and Rozin, 1983). Especially in a society with such a limited traditional diet, individual taste preferences are not easily changed. Soya seems a likely candidate for adoption in Yorubaland for several reasons, including its affordability and adaptability to the traditional diet. However, soya is sometimes rejected because of palatability issues such as taste, odor, or texture. A major complaint concerning the taste of soya is that it has a "beany" taste, which is most often detectable in soya milk. The spices typically added to other Nigerian dishes commonly mask this beany taste. Most soya promoters advocate the use of sugar or other sweet flavorings when preparing soya milk. However, some women find that even with spices or flavorings the perceived unpleasant taste of soya cannot be masked.

Three women "exited" the tree at Questions #43 and #44 which asked if the woman herself liked soya and whether or not she would fix foods for her family that she did not like. All three women answered "no" to each of these questions indicating that these constraints would prevent them from adopting soya. However, two of these three outcomes were "errors," meaning that although two of the women indicated that this was a constraint to soya use, they prepared soya twice a week or more anyway. In the case of

Woman #6, she reported that she personally did not like soya and would not prepare foods that she did not like, but she also reported that her husband made the food decisions in the household. When asked if her husband and children liked soya, she answered "yes." This implies that although she may not prefer to prepare foods that she does not like, she is actually not the decision-maker over food preparation within the household. Thus, because her husband likes soya, she prepares it anyway. Woman #54, on the other hand, also indicated that she did not like soya and did not prepare foods that she did not like, but also reported that she was the decision-maker within her household concerning food preparation. On further inspection of her survey, it was discovered that her children do like soya and that she mainly prepares soya milk rather than other soya foods. In other words, she does not typically add soya to traditional foods that she prepares for the adults in her family. Because soya milk is frequently viewed as a soya food expressly for children, this may explain why she answered that she would not prepare foods that she did not like, but prepared soya twice a week or more anyway. Furthermore, as soya milk is considered as *epanu* (a snack) by many, she may have felt that this was not preparation of "real food."

"I have heard bad things about soya or about beans"

One of the greatest obstacles to adoption that soya has had to overcome is that of the misinformation that has been circulated that soya is "poisonous." These rumors stem from the fact that soya contains an anti-nutritional substance called a trypsin inhibitor and a lipoxigenase enzyme that gives an off-flavor to foods improperly cooked with soya. Although the presence of the trypsin inhibitor is not directly harmful to the human body, many Nigerians have mistakenly understood it to be a "poison" rather than an anti-

nutritional factor that simply decreases the efficiency of protein absorption in the body if the bean is not properly heated before consumption. When protein foods, such as soya, are eaten, digestive enzymes break them down into amino acids. These amino acids are absorbed in the bloodstream and carried to the rest of the body where they help build, strengthen and repair body tissues. A trypsin inhibitor simply prevents the digestive enzyme trypsin from dividing protein foods into amino acids and thus makes the consumed protein less valuable to the body (Soyabeans in the Nigerian Diet, 1985; IITA, 1990). It is not, however, a "poison" that causes illness or damage to the body.

The good news about the trypsin inhibitor and lipoxygenase enzyme found in soya is that both can easily be destroyed by boiling or cooking. Dry, unsoaked beans require a boiling time of twenty minutes in order to eliminate these substances. Soaked beans, on the other hand, must only be boiled for five minutes in order to destroy the trypsin inhibitor and the lipoxygenase enzyme. Although the process is simple and the problems are slight even in unboiled beans, these substances have caused some misunderstanding regarding soya use. Several women interviewed mentioned a time in which there had been a "scare" over soya. In the early years in which soya was gaining popularity, news reports suggested that soya contained poisons that could be deadly if they were not prepared correctly. These types of "scare" reports are fairly common in the newspapers of the country and although they evidently had a temporary negative effect on the use of soya, they seem to have presented no long term constraints to its adoption. As Mrs. Akinafasi, the 30-year veteran of Kersey, said during an interview, "...they broadcast, 'don't go to soya, soya is killing people. When you reach Baptist Hospital there is no cure for the disease that soya will bring to you.' This was a couple of years ago. Some do come and

ask and we tell them that there is nothing like that. 'We are the ones that told you that you must use soya. We too are using it. There is no problem. Eat soya as much as you can.' They are going back to it. People are eating soya very well now."

Thirty of 60 respondents or 50% of the women surveyed indicated that they had heard negative things in the media or from other people about soya or beans in general. This was to be expected as a recent article in the national newspaper had reported that an entire family had died from eating "bad" beans. However, all but two of these women who had heard these reports felt that they could still consume beans if they either grew or prepared the beans themselves. Therefore, only two women surveyed indicated that rumors about soya had prevented them from consuming or preparing soya for their families.

Conclusion

Errors in the Model

There are two possible types of errors in composite models for any decision-making process. A model may predict that a person does do a certain action when in actuality they don't, or it may predict that they don't do a certain action when they in actuality they do. In this model, six women who claimed to be adopters exited the model at one of the constraints. As mentioned in previous sections, one woman indicated that soya was too expensive to purchase, but prepared it twice weekly anyway. Two women reported that soya was too time-consuming to prepare and that they did not prepare time-consuming foods in general, but prepared soya anyway. One woman indicated that soya upset the stomach of one of her household members. Although she claimed to never prepare different foods for different people at a single meal, she still reported preparing

soya twice a week or more. Two women whose surveys resulted in errors claimed that they did not like the taste of soya and would not fix foods that they did not like.

However, these women were both adopters. The final three survey errors were women who were not adopters, but "passed" all the constraints anyway. In other words, although the model showed that they had sufficient motivation and no constraints to adoption, they still did not prepare soya twice a week or more.

How can these errors in the model be explained? There are three possible answers. The first answer, based on the food habits literature, is that some food habits cannot be easily explained. Individual tastes and preferences are complex and can be difficult to analyze. The following excerpt from an interview with Kersey client who prepares soya for her child but not herself illustrates the unexplained aspects of dietary choices:

A: So you prepare the baby's food separately? How do you prepare it differently? How is it different?

Woman: When we eat amala, I will cook it for me and my husband, but I will put soya in the baby's.

A: So you and your husband do not eat soya?

Woman: We used to take only the milk.

A: Why do you not put it in your and your husband's food?

Woman: No reason.

A: You don't like it?

Woman: I like it.

A: Will your husband allow it?

Woman: Yes.

The second possibility is that some of the women were simply not telling the truth. Although every attempt was made to assure informants that no punishment or benefit was attached to the interview, some women undoubtedly said what they felt we wanted to hear. Because the soya campaign is strong within the Ogbomoso Zone and numerous organizations are working to promote it, it would be a likely assumption among women to believe that anyone asking questions about soya had a vested interest in its adoption. This may account for women who claimed to prepare soya twice a week or more but then inexplicably exited the decision tree at a constraint. Staff members from Kersey and World Vision expressed on many occasions their frustration with women who claimed to be doing the "prescribed" actions, but who obviously were not. Kersey staff, as will be discussed in the following chapter, even have ways of "trapping" women in untruths and encouraging them to be truthful.

The third possibility is that the model is flawed. This could happen in two main ways. First of all, the model may be missing a vital motivation or constraint to soya adoption. There may be some hindrance to adoption that was never expressed during the initial ethnographic interviews or mentioned during the survey period. Because a model is, by definition, a simplified version of reality, there is a strong possibility that some nuance or subtlety of adoption was overlooked. Secondly, the composite tree might have listed constraints that are not sufficiently great hindrances to actually prevent adoption. For example, it was assumed during model construction that if soya upset a household member's stomach and a woman was unwilling to cook different foods for different people at one meal that she would simply avoid cooking soya for her family. However, one woman indicated that while this was true, it was not a strong enough constraint to prevent

her from preparing and serving soya. Perhaps the individual whose stomach was bothered by soya simply did not eat the soya foods, but only other foods offered at the meal. In another scenario the family member, if fond of soya, might consume the soya food despite the fact that he or she knew that it bothered their stomach. A range of scenarios could explain this failure of the model; however, because this is most likely an atypical rather than typical situation, the model was unable to account for the decision.

Motivations for Adoption

All women surveyed in the final sample group reported that they had heard of soya and had at least one motivation for adopting soya; therefore, all women "taken through" the model "passed" from the "motivation section" into the "constraints section" (Prepare Soya Unless) of the composite decision tree. A number of motivations for adopting soya were expressed by informants during ethnographic interviews and incorporated into the composite decision tree. Although fifteen specific motivations are found within the composite tree, two general reasons for adopting soya among the Yoruba women in the Ogbomosho Zone were identified: (1) health reasons and (2) economic reasons.

A major contributing factor to soya's adoption in the Ogbomosho Zone has been the high profile it has gained as a "health food." It is even considered a "medicine" for *ile-tutu* by many women since its consumption by weaning and malnourished children has been encouraged by the health and nutrition clinics of the area. Even the Ogbomosho Baptist Hospital often "prescribes" soya as a cure for many ailments, including swelling and leanness. Because of the intense social marketing of soya in the Ogbomosho area as a remedy for health problems, it is viewed primarily in this light by many of the women. All respondents to the survey indicated that they had been told by family, friends or medical

personnel that soya was "good for your body," "provides blood" or "provides energy." When questioned on the perceived benefits of soya consumption, 55 of the 66 women who responded (83%) indicated that they did believe that some illnesses, like *ile-tutu*, could be cured or helped by soya.

Women, however, may be able to cite the health benefits of soya, but still not consider soya as a perceived need for their own household. Questions 14, 15, and 16 on the survey address the issue of whether or not a woman considered her family to be at risk for the ailments most commonly associated with soya use. Twenty of the sixty-six women (30 %) who responded indicated that their children under five had gotten lean, had swelling, *ile-tutu* or *oka* at some point in their lives. However, 90% of the women surveyed did report that they worried about these things and/or pursued measures to prevent them. Common responses to how to prevent *ile-tutu*, for example, were "give good food" and "keep the household clean." These responses indicate that most women are concerned over health issue for their families and do have some superficial knowledge of the connection between food, sanitation and illness. However, if a woman believes her family to be presently in good health, she might feel that she has no pressing motivation to adopt soya for health reasons. A similar situation in the United States is the almost universal knowledge that twice yearly dental visits are recommended; however, unless a problem arises many people will ignore the advice even though they may feel that it is the optimal way to maintain strong, healthy teeth. The cost or discomfort of visiting the dentist frequently overrides the motivation to do so. Knowledge and action, in any society, are often entirely separate entities in health matters.

Another motivation to soya adoption does exist, however, and may be a growing factor in future soya use. As discussed in previous chapters, the economic situation has steadily declined in the 1990s in Nigeria. By most accounts, informants indicated that food was less plentiful and illnesses, such as *ile-tutu*, were more pervasive in recent years. The economic decline has forced some changes in lifestyle, including dietary habits, that otherwise might not have occurred. The dietary changes have provided an opening for soya as a substitute food for other more expensive staple foods. For example, *egusi*, the melon seed commonly used in stews and soups is significantly more expensive than soya. Soya, however, has a texture similar to that of *egusi* in most traditional dishes and can be used as a complete substitute or as a "filler" in order to reduce the cost of the dish without significantly changing the taste or the texture. Many women interviewed, especially those involved in trading, reported that they were familiar with soya in part from the market, as well as from the numerous clinics in the area. While only 6 of the 70 respondents indicated that they had first *heard* of soya in the market, several of the informants during lengthy interviews said that they first *prepared* soya because of its relatively good price, especially during its harvest season beginning in November. Of the 67 women who responded, 21 reported that they or one of their family members was presently selling soya and 33 were growing soya. In Africa peasant populations studies show that changes in agricultural production frequently have a significant impact on patterns of food consumption. The introduction, production and subsequent adoption of cassava as a staple food in Zambia provides an excellent example of this (Lentz, 1991). Since all women in this study reported that they ate some or all of what they grew within their

household, this indicates that the economic incentive to grow or sell soya might also be incentive for consuming soya.

Another aspect of soya adoption and its relationship to the declining economy is the blossoming area of prepared soya sales. As discussed earlier in this chapter, most women indicated that they prepared soya rather than purchased it already prepared because of cost or availability constraints. However, four of the twenty-one women (20%) who did not adopt soya did so because they bought soya rather than prepared it. Furthermore, during the course of this research, I encountered four women who were leaving wage labor or other types of trading in order to sell prepared soya on a full-time basis. Iya Soya (Mother Soya) from Kersey was one of the women who was giving up full-time employment at Ogbomoso Baptist Hospital in order to pursue a business in selling soya foods. Although these numbers are not large enough to infer a strong movement towards soya sales, it does imply that some women consider the demand to be high enough to support a business devoted entirely to soya food sales.

Constraints to Adoption

The major constraint to soya adoption among Yoruba women in the Ogbomoso Zone, according to the results of the composite decision tree, is that many women do not know how to prepare soya or are unwilling to invest the time and effort required to prepare soya. Eight of the twenty non-adopters indicated that one of these constraints lead them to choose to not prepare soya, although each had a motivation to utilize soya. The problem of learning to prepare soya is one that is easily overcome in most areas of the Ogbomoso Zone as World Vision, Community Health, and Kersey Children's Home, as well as other organizations, have provided clinics in the city and in the surrounding

villages. In addition, interviews with former clients of these clinics suggested that many women were willing to pass on their on knowledge of soya preparation to others.

However, many women still continue to feel that time constraints prevent them from learning to prepare soya, a food often considered *epanu* or "not really food." Others who know how to prepare soya feel that the preparation time involved is prohibitive. With a host of additional family responsibilities presently being placed on Yoruba women in the Ogbomoso zone, time constraints are undoubtedly a major factor in unwillingness to take on any new task, even one that is believed to be important to the health and well-being of the household. For those who have "adopted" soya, the motivations to do so have had to be compelling. As one young mother said when I asked her if soya was more difficult to prepare than other foods, "It is not difficult because I need it." As with any innovation, the perceived need must outweigh the perceived constraints.

A second major constraint to soya adoption appears to be the unfamiliarity or dislike for the taste, odor or texture of foods prepared with soya. Although this problem was greater in foods made exclusively from soya, such as cheese or milk, many informants indicated that this was also a problem with foods in which soya was simply an additive. According to Kersey staff who teach soya preparation, there is a proportion of soya to other ingredients in most traditional foods beyond which the taste or texture of soya becomes unpalatable. For those unfamiliar with soya preparation or attempting to prepare soya from "trial and error," the resulting "beany" taste can be a constraint to further preparation. Understanding of this problem has led many in the social marketing of soya to focus on various soya preparation techniques that mask the unfamiliar taste, odor and texture. As mentioned previously, IITA and many of the clinics involved in soya have

developed their own recipes and preparation techniques in order to make soya more generally palatable. However, as with the adoption of any innovation, time is a necessary factor in creating familiarity. One distinct advantage that soya enjoys at present in Yorubaland is that it is being marketed primarily towards children's foods. Children who are given soya at an early age are more likely to accept it in adult foods later in life.

The time and circumstances for adoption of a "new" high-protein, affordable food in Nigeria is seemingly right. The economy is floundering and health and nutrition problems are growing in its wake. In light of the present nutritionally-stressed environment within Yorubaland, it is understandable that soya is finally gaining recognition and acceptance although it has been grown within the country for decades. In fact, the majority of the women sampled in this research indicated that they first heard of soya in the 1990s, many since 1993. Therefore, most women surveyed during the course of this study were relatively "new" adopters.

The soya adoption decision modeled in this study considered only present use and preparation of soya. Although 80% of survey respondents were classified in this research as "adopters," many of the "non-adopters" interviewed in the preliminary ethnographic interviews indicated that they once prepared soya, but were no longer preparing it. This was most commonly found in women who had at one point had a malnourished child and sought help at one of the medical clinics. These women often gave their children soya as they would a medication -- only until the symptoms of *ile-tutu* disappeared. Others prepared soya for their children until they were a certain age and then abandoned the practice. This phenomenon suggests that even "full adoption" of soya by a household does not always translate into long-term adoption.

Long-Term Soya Adoption

The short-term adoption of soya for health purposes parallels the adoption of many health practices in both the developed and developing worlds. People often respond to pressing medical crises by making the changes needed to gain immediate results. However, once a crisis is over, it is much more difficult to elicit long-term change for overall health and general well-being. In the adoption of soya in Yorubaland, the motivations for adoption of soya appear to be compelling. It is recommended in many medical clinics and hospitals and is generally affordable. It is easily worked into the traditional diet. However, most women do not use soya until they are encouraged to do so by medical personnel, usually because they have a sick child. This is the primary impetus at present for soya use among women in the Ogbomoso Zone. This does not mean that "adoption" will be permanent. However, once a compelling motivation for use arises and women learn to prepare soya and households become familiar with its taste, a major constraint has been overcome. Although the initial reason for adopting soya--health reasons--may diminish with time, other reasons such as economic ones may be powerful enough to guarantee long-term adoption.

The following chapter will explore some of the underlying cultural themes that affect health-care practices among Yoruba women within the Ogbomoso Zone. These pervasive beliefs and customs have a great impact on women's health-care seeking behavior and the effectiveness of the clinics operating in the area, both of which ultimately will affect the long-term impact soya will have on the health and nutritional status of persons within the area.

CHAPTER 6

CULTURAL THEMES PERTAINING TO FOODWAYS, NUTRITION AND HEALTH IN THE OGBOMOSO ZONE

Discovering and analyzing cultural themes in research can aid in understanding the relationships, behavior, and decision-making processes within a cultural group (Gladwin, 1996). Cultural themes are underlying general patterns or issues within a culture. In ethnographic studies, cultural themes are those recurrent principles or relationships that continue to surface during interviews with informants. Although often not directly expressed by informants as such, these themes help the researcher to more clearly understand the values and beliefs of the culture-bearers. Cultural themes can provide critical insight, especially in applied research, by allowing the researcher to explore areas of behavior, tradition, culture and decision-making that the informants themselves may not be consciously aware of or able or willing to discuss.

This chapter seeks to illuminate a few of the many cultural themes concerning Yoruba women, health care and adoption of health practices and food habits. The discussion and analysis of these themes is aimed toward providing a clearer understanding of the culture of Yoruba women in general and the constraints and motivations impacting their health care and food choices in particular. These are limited in quantity and depth of discussion to the few most important issues regarding health care in the "soya" clinics of the Ogbomoso Zone. Although many other interconnected themes surfaced, the most crucial will be explored in this chapter in an effort to shed light on women's knowledge

and understanding of illness and disease, women's health-care seeking behaviors, and cultural issues impacting the delivery of health care by the clinics in the Ogbomoso Zone.

Themes in Yoruba Women's Understanding of Illness and Malnutrition

It is not an uncommon occurrence in the Ogbomoso Zone to find villages where a majority of the young children appear to be slightly to severely malnourished, even to the untrained eye. Extreme leanness, swelling of the extremities and discolored or thinning hair are all easily recognizable symptoms of undernutrition. For one looking for these signs, they appear to be obvious; however, to many women and mothers living within the village, these signs seem to go unnoticed. The recognition of nutritional problems is the foundation for and critical element in improving the health of the Yoruba children in the Ogbomoso Zone. If a health problem of a child is to be treated, it must first be recognized by the mother and deemed serious enough to warrant treatment. When I asked patients at Kersey why they eventually brought their children to the clinic, they answered in various ways:

"My baby does not cry, but does not sleep during the night."

"I first noticed fever, then swelling of the arms and legs and then watery stool."

"The baby had ara gbigbona (high temperature) and his palms were white."

"She had a fever. Swollen feet and hands."

Chronic problems, such as malnutrition, which usually proceed slowly over a period of weeks and months unless accompanied by illness, are frequently unrecognized or ignored by mothers. As indicated in the statements above, most women need a distinct ailment, such as fever, to inspire them to seek help. No woman interviewed, for example, stated that she ever had sought help for a child primarily because they were too "lean" or

were not growing properly. Among the women studied, problems generally needed to be perceived as serious in order for medical care to be pursued. The possible reasons for this common phenomenon in the Ogbomoso Zone are discussed in the following sections.

Lack of Sufficient Medical Information from Health-Care Providers

In many of the industrialized countries of the world, the average person is bombarded daily with health information and advice. In the United States, for instance, it is now common for patients to become actively involved in their own treatment and recovery from illness by utilizing the many health-information avenues available to the lay person. This situation differs profoundly from that found in Nigeria. Most patients in Yorubaland are given very little specific information concerning illness or treatment. This is due in part to the fact that the majority of patients are treated for ailments so "common" that detailed discussion is often deemed unnecessary. In medical facilities in the Ogbomoso Zone, for example, patients are routinely treated for malaria regardless of the problem that led them to seek medical care. Because money and time are limited in Nigerian medical facilities, widespread but deadly diseases, such as malaria, are always given first consideration and treatment. As one doctor said, "We assume it is a horse and not a zebra."

These attitudes and assumptions of medical personnel, especially among doctors in the Ogbomoso Zone, have a great impact on the ability of the average Yoruba woman to understand the illnesses affecting herself and her children. Because treatment for common ailments are fairly easily administered, many doctors find it unnecessary to explain or discuss the problem with the patient or the patient's parents. For example, a course of medication or "tablets" is given for malaria. The medication is often placed in unlabeled

bottles or ones that have a simple notation such as 1-1-1, meaning to take one tablet three times a day. When asked what the medication is or what it is for, most women are unable to answer either question. Most women simply "believe" that the medication will cure whatever is wrong with them or their children. Because of this practice, or perhaps in spite of this practice, many Yoruba women have an undue faith in Western-type medications and frequently request a "tablet" or "injection" when a child is sick. The lack of knowledge lends itself to an almost magical belief in the power of medication, rather than in lifestyle change, and leaves women vulnerable to unscrupulous medicine sellers and untrained health-care providers, as will be discussed in more detail within this chapter.

The practice of administering treatments with no explanation or discussion can be detrimental in many ways. First of all, several medications are often prescribed at once. If several unlabeled bottles are handed to a mother, with only a cursory explanation of proper dosage, it is almost inevitable that medications will be administered incorrectly. One visiting doctor explained that this is common practice in the village clinics in the Ogbomoso area. No woman she observed ever sought further information or explanation for the medications she was being given. This practice is so accepted among the Yoruba that any break from this custom is considered suspect. One American recounted an incident in which she accompanied a Nigerian friend to a hospital for treatment. When the woman was given her medication, the labels contained only simple dosage instructions. The American, concerned for her friend's health and desiring to know the actual diagnosis, questioned the pharmacy worker as to the type of medication being given. She asked that the technician write the name of the medication on the bottle. The technician became

alarmed and informed her that he would have to consult with the doctor before they would be able to release the information. The diagnosis was eventually, but reluctantly, given.

A second problem with the practice of giving the patient no substantial information about illness or treatment is that many people seek several courses of treatment from several different "health" providers at once. As will be discussed later, most women have a series of actions or "script" that they frequently take when seeking treatment, with variations depending on the severity and length of illness. Most women, for example, will first seek local care from traditional healers, traveling medicine sellers or village health post workers. If the condition does not improve, women will then seek help from a larger clinic or hospital. If the diagnosis or treatment from the first caregiver is not known, subsequent treatments can be less effective or even deadly. For example, one Kersey patient interviewed reported that she had been to three hospitals in the months preceding her admittance to Kersey. Her child's extremities had begun to swell--a common sign of kwashiorkor--and she had become concerned. At each hospital the child was given "injections" and medications, but the mother was never given any explanation as to what was wrong with the child. After each hospital visit the child would subsequently become ill again. The staff at the hospitals never questioned her as to what she was feeding the child or advised her on diet. Even at Baptist Hospital she was simply given a sealed envelope to take to Kersey. It was not until her arrival at Kersey that she heard any explanation of malnutrition or *ile-tutu*. Had she been fully informed of her child's condition at the first hospital, the child might have avoided the months of illness and any permanent damage that long-term malnourishment can cause.

The third problem with this practice is that it encourages unhealthy lifestyles, placing undue emphasis on medication instead of needed lifestyle changes. Much of the disease in Yorubaland, for example, is caused by unsanitary environment. Especially in the city where open sewage flows between houses, contamination of food and drinking water is common. Many mothers are unaware of the most basic sanitary practices concerning human waste disposal or "toilet" training. Diapers, usually just thin cloth strips or regular underwear, do little to prevent "accidents." Toilet training, as I observed when living with the Yoruba family in Ife, is often carried out by the older siblings, rather than by the parents. This results in questionable sanitary conditions even when running water is available within the household. When these issues are not addressed by health-care providers, illness and disease are destined to be cyclical. For example, during an interview with one doctor we discussed the situation of sexually-transmitted disease, which is common because of polygamy and promiscuity among Yoruba men. The doctor discussed his treatment of a woman with a sexually-transmitted disease that she had gotten from her husband. This husband had several wives and was therefore a great infection risk to others. When I asked the doctor if he had explained the cause and effects of this disease, he said "no." The wife was given medication and told to have the husband come in for treatment, but no further explanation or advice was given.

The practice of giving little information to patients in Yorubaland appears to be common among both "Western" and "traditional" health-care providers. The reasons for this practice are complex and vary from one health-care provider to the next. I was able to interview several of the "Western" doctors--some were nationals and some non-nationals--about this way of dealing with patients. Some doctors interviewed stated that

because the formal education of most women is limited, a long, tedious explanation can be useless and perhaps unwelcome. Patients simply do not expect or even desire "extraneous" information. Most want medication and a quick cure. Other doctors intimated that with limited time and resources the best they can hope to offer is treatment for the most basic and pervasive illnesses. Advice on nutrition and sanitation practices is frequently unheeded and ultimately viewed as a waste of valuable time. Many of the patients merely do not understand cause and effect of disease and illness well enough for explanations and advice to be helpful. Furthermore, culture and ingrained belief systems often override any advice given by Western medical providers. They are considered, in many cases, to be only the "last resort" in critical health emergencies.

Taboos and Belief Systems Among Yoruba Women

During interviews with Yoruba women I discovered a belief system concerning illness and malnutrition (*ile-tutu*) that incorporated both the physical and spiritual realms. Many women surveyed indicated that they believed *ile-tutu* was caused by lack of good food or the lack of a clean environment. However, when questioned more closely women frequently indicated that other causes existed. *Ile-tutu* in Yoruba literally means "cold ground." In other words, this ailment is more common during the colder, rainy season than the warmer dry season. This term can be interpreted to mean "malnutrition" because some of the easily identifiable signs of both are edema, extreme thinness, stunting, discolored or thinning hair, and listlessness; however, many women are unaware of its true connection to food. I questioned Mrs. Akinafasi, the "house mother" at Kersey for over thirty years, about women's understanding of *ile-tutu*:

AEB: I am wondering, before women come here, out in the villages, do women know that food can make their babies sick? Or the lack of food can make their babies sick?

Mrs. Akinafasi: They don't know before. They don't know. And most them can never believe that food causes malnutrition. So few, not much.

AEB: I have tried to ask women what they think *ile-tutu* is. Is *ile-tutu*, is that what they call swelling? What about when they get lean? What do they call it?

Mrs. Akinafasi: The same thing. They call it the same thing.

AEB: Okay, *ile-tutu*. Do you ask women what do you think caused this? Do they tell you?

Mrs. Akinafasi: Yes. Now we don't call it *ile-tutu*. Some still do call it *ile-tutu* but some are not calling it that here. Some say, "When I stop my baby from breast, he stop eating. Then he began to swell." Instead of saying, "I don't know, my baby have *ile-tutu*." But they will not say that. They just say that after stopping the baby from the breast, the baby just stop eating and the swelling comes.

AEB: So they don't call it *ile-tutu*?

Mrs. Akinafasi: It is malnutrition, but they just call it *ile-tutu*. But it is a lack of food.

AEB: So when they come here, if they say that it is *ile-tutu*, they don't know what has caused it?

Mrs. Akinafasi: They don't know. Unless we tell them. Before they are discharged we let them know that "since you have been here we have just give him (the baby) a month of medicine. Just to make you happy. The baby does not need any medicine, he need food."

A poignant illustration of lack of knowledge among Yoruba women concerning malnutrition is the case of Victoria, a severely malnourished seven year-old girl. Victoria's father and mother-in-law brought Victoria into Kersey and were eventually joined by her mother who agreed to stay for the month-long inpatient treatment. I was able to interview the mother concerning her and her family's decision to come to Kersey for treatment. When I initially asked her about Victoria's symptoms, she replied that she only noticed that she had a fever and that her feet and hands were becoming swollen; however, when

Victoria was admitted she was literally without visible muscle or fat. She told me that when she noticed the symptoms, she first took Victoria to an *ologun*, or medicine seller, who eventually told her to bring Victoria to Kersey. I questioned her about Victoria's symptoms:

AEB: Did you notice that she was getting lean?

Victoria's mother: I noticed only the fever and the swelling.

AEB: When the *ologun* told you to come to Kersey did he tell you what was wrong with her?

Victoria's mother: He did not tell me anything.

AEB: What did you think was wrong with her?

Victoria's mother: I did not know. I just knew that she was sick.

AEB: Did anyone tell you that it was *ile-tutu*?

Victoria's mother: No.

Although Victoria represents the extreme case in that she was severely malnourished and wasted when she arrived at Kersey, the knowledge and understanding level of Victoria's mother is not atypical. The signs of Victoria's condition were obvious, and yet, until fever and swelling occurred, the family sought no help for Victoria. This may be due in part to a belief that the causes of illness, including *ile-tutu*, are spiritual rather than physical in origin. One former patient of Kersey, pregnant with another child, explained the cause for *ile-tutu* in her small child who was being weaned. Instead of believing that the removal of breast milk from the baby's diet caused the problem she expressed the belief that the new baby was "making the (older) child sick." The belief that an unborn child can taint the breast milk of a mother or cause illness in an older child is

common and undoubtedly stems from the fact that *ile-tutu* is so prevalent in children who have been weaned too early due to a mother's subsequent pregnancy. Because of this common belief, it is essentially taboo among Yoruba women to breast feed a child once the mother has become pregnant again. Lengthy explanations of the physiological reasons for the older child's illness are unlikely to convince most women. Most clinics simply hope to encourage women to give adequate weaning foods to the older child instead of trying to convince them to continue to breast feed.

"Alagbara Olorun"

Associated with taboos that are spiritual in origin is the prevalent belief that many illnesses are beyond human control. A deeply-rooted belief in Yoruba culture is the belief that spiritual forces impact the health, fortune and well-being of humans. Although these beliefs originate in the traditional religion of Yorubaland, they permeate the Christian and Muslim communities as well. A common saying, for example, is *alagbara Olorun*, meaning "God willing." No Yoruba will make a pronouncement of intention to travel or to take some future action without prefacing it with "*alagbara Olorun*." This sentiment flows through all aspects of life in Yorubaland. If a person loses their fortune or a house burns down, a spiritual cause is sought. One woman during an interview expressed the belief that if a child dies or a person's health fails it is often due to a "hex" an enemy has placed on a person through a deity. Even those who no longer practice traditional religion on a regular basis will sometimes seek the help of a *babalowe* (traditional religion diviner) in order to uncover the spiritual causes of misfortune in their lives. The cure may be the sacrifice of an animal, the cessation of some practice or payment to the *babalowe*. In one

case, for example, a *babalowe* informed a woman that the "cure" to her misfortunes was to stop wearing the color purple.

This underlying belief in all things being divinely influenced arose in initial ethnographic interviews when I asked women how many children they had. Because the number of children a Yoruba woman has is supremely important to her status in the household and community, I expected that women might exaggerate their number of children. However, I was surprised to find that women were reporting fewer children, rather than more children. I discovered this as village women would keep the woman I was interviewing "honest" by informing me that she was lying. Initially I thought the reason was because I was an *oyinbo* ("European") and that the women believed that it was culturally more acceptable to me to have less children. When I inquired about this to several older women, however, they told me that women did this so that *Olorun* (God) would not think that they were bragging and take one of their children. This was another clear illustration of the belief in divine intervention. Because many women will lose one or more children during their lifetime, this belief is one of the ways in which women can deal with the death of a child. Unfortunately, it can also mask critical physical causes of illness and death in children such as poor diet or unsanitary living conditions.

Food as a "Power Tool"

As in any society, food represents much more than just nourishment in Yoruba society. It is an important part of any celebration and is used as a form of hospitality or to show respect. The finest, most expensive foods will be brought out for visitors, for example. Meat, rice and pounded yam will frequently be served to guests in households where these foods are delicacies or are generally cost-prohibitive. Furthermore, age and

status within the household are indicated by the quantity and type of food served to an individual. A husband, for example, will typically eat before his wife or wives and children. He is often given the "best" foods in the largest portions. It is not uncommon for a man to eat stew with meat while his wife and children go without. Even in upper-class, monogamous households the man is typically afforded the best foods.

In my experience living with the Yoruba family in the city of Ife, I was able to observe the cultural norms surrounding food. Although both Mr. and Mrs. Olowookere are college-educated and were working in the formal sector, their financial situation at the time was precarious because the universities had been closed by the Nigerian government's failure to pay salaries and by the strikes that followed. Therefore, although they might have been considered "upper" class, their living conditions were only somewhat better than the average Nigerian's living conditions. In other words, providing adequate food for their family was a struggle. Although I rarely ate a formal "meal" with the family because their night meal was served quite late, when the husband arrived home, I was able to observe the food preparation and division among the family members. The children, Olumide, age four, and Yinka, age two, were fed each night before their parents' meal. They were generally given some soup and either rice or yam. Small shreds of meat were sometimes included with their meal, but not on a daily basis. When I asked Mrs. Olowookere about this, she indicated that they did not "need" meat like adults did. However, their high-starch diets and their overwhelming desire for protein were indications of a poorly balanced diet as they visibly became agitated and excited over any high-protein food such as meat or eggs. Eggs, for example, were purchased especially for me but were not given to the children, except surreptitiously as their mother forbade me to

share with them in her presence. The longing looks and secretive imploring when their mother was not near were a sign of the lack of protein-rich foods in their diets.

Mrs. Olowookere provides an illustration of how even well-educated women in Yorubaland are often unaware of the nutritional needs of children. In many cases this stems from taboos surrounding meat and egg consumption for children. Many young children are not given meat because adults believe that it will "make them steal." Meat appears to be an indulgence only suitable for adults in most households. However, these foods are frequently used as "power tools" by mothers. While living with Mrs. Olowookere I observed a type of "play" with her children over food. She would taunt her children with foods, such as meat, that they most wanted and needed. This was not done to elicit certain behavior or as punishment for a wrongdoing, but as a source of amusement. She would hold out a piece of meat or egg and tease the youngest child, Yinka, with it until he cried. At times she would then proceed to eat the food herself, never relinquishing the coveted food to the child.

I observed this behavior in other situations as well. At Kersey I observed a situation with Victoria's mother and her small son who was about two years old. She was eating a bowl of *pap* made with soya and her son was watching her very intently. She began to give bites of her food to the other children around her, excluding only him. Finally he began to cry and she continued to eat without acknowledging him. Eventually she held the spoon to him, but only briefly put it in his mouth, not long enough for him to actually eat any of the *pap*. I began to notice that this was common behavior among mothers and was considered humorous to women watching as well.

Observations and interviews during field work did not provide any real insight on the roots of food being used by mothers as a form of taunting and amusement. The only real explanation ties into the fact that few mothers seem to understand the true connection between food and health in their children. Their children's intense desire for protein-rich foods seems to be viewed as one might view a child's longing for a toy or a withheld object. Also, although I did not observe food being used directly as a punishment for a breach in good behavior, it is certainly used as a form of "control" over children, perhaps as an extension of the system of food as a status symbol within a household.

Themes in Health-Care Seeking Behavior Among Yoruba Women

The issues that influence health-care decisions are complex in both industrialized and traditional societies. Decisions may be based on money, transportation, social marketing, cultural compatibility, religious preference or a host of other individual factors. This is certainly the case among Yoruba women of the Ogbomoso Zone in southwest Nigeria. Although access to well-stocked, well-staffed "Western" health care facilities is relatively limited throughout Nigeria, the number of various health-care options are in reality numerous. Because of the dire economic situation in Nigeria at present, the availability of various types of health care has grown, not diminished. Many persons, both trained and untrained, have entered the health-care field as a means for survival. Demand for their services is growing in part because pharmaceuticals are in great demand, but are in limited supply. Furthermore, as the relative price for all care is rising due to inflation, less expensive options to "Western" care are being sought.

In many developing countries there is a distinct separation between two types of medicine available -- "Western" and "traditional." However, many developing world

health-care specialists are now realizing the possible advantages of combining the two types of care for more cost-saving, culturally-acceptable treatment. In Nigeria, there still exists the two extremes between Western and traditional, but there is now also a complete range of services being offered that falls between the two extremes. Many persons are offering medical care that combines traditional and Western treatments. While this approach appeals to many for both economic and cultural reasons, it also has its drawbacks in that it is an avenue for untrained persons to "cash in" on the demand for locally-available, low-cost health care.

The following sections examine the various medical options accessible within the Ogbomoso Zone, ranging from "Western" to "traditional." Yoruba women's health-care prioritization schemes are considered for a better understanding of how and why women go about obtaining health care for themselves and their children. The impact of common cultural attitudes and behaviors are examined as to how they relate to the health and well-being of households. Finally, the cultural suitability of the clinics is investigated through the cultural themes that impact the way the staff interacts with patients and the methods of teaching that are utilized.

Health-Care Options in the Ogbomoso Zone

As mentioned above, a plethora of health-care options exist within the Ogbomoso Zone. A number of avenues for medical care are available within the area ranging from the "Western" care provided at Ogbomoso Baptist Hospital to the "traditional" care of many *babalawes* and *oniseguns*. In addition, there are a host of "traditional-Western" medical caregivers such as traditional midwives trained in Western clinics, medicine sellers who provide both herbal and Western medications, and herbalists who treat with

traditional medicine but who are willing to "refer" serious cases to Western medical facilities. This wide range of health-care possibilities allow for an endless combination of treatments for any ailment. As will be discussed below, these options can be beneficial in that the people of the Ogbomoso Zone have numerous choices based on their finances, time and family situation. However, it can also be detrimental at times as treatments from the various care-givers do not always complement each other. The balance between treatment and care-givers in many situations is precarious at best.

Traditional healers

Two of the initial questions that I asked during the lengthy ethnographic interviews with Yoruba women were "How do you know when your child is sick?" and "Where is the first place that you take them when they are sick?" As I discovered, most women only recognized the need for treatment once symptoms were acute. Swelling, fever and persistent diarrhea were all common reasons listed by women for seeking care for their children. In most cases, women reported that they *first* sought help from local medical practitioners, usually traditional healers. Every village visited during research provided some form of care. Most villages had a *babalowe* or *onisekun dudu* within the village or in a neighboring village. These are both traditional healers. A *babalowe* is actually a *Ifa* (a Yoruba god) diviner who provides "spiritual" cures. An *onisekun dudu*, which literally means "doctor of black medicine," provides herbs and traditional medical care of a non-spiritual nature.

I interviewed a well-known traditional healer in the Ogbomoso area in order to discover what distinctions existed among types of traditional healers. The informant was the son of a well-known *babalowe* and had a thriving "practice" in the heart of the city.

Arriving at his "office," a small room in the front of his house, I found a room full of women and children. Although the windows were without glass, the floors were dirt and there were no examining rooms or tables, the atmosphere was much like that of a doctor's waiting room in the United States. The *onisegun dudu* was treating everyone from a small desk in the front of the room, allowing no private consultations. This seemed to have little impact on the chatting mothers and busy children, some crying in obvious discomfort. During the interview I asked for an explanation of the difference between *babalowe* and *oniseguns*:

AEB: I am wanting to understand the difference between an *onisegun* and a *babalowe*. Is there a difference?

Onisegun: There is a difference. *Babalowe*, if they heal someone, they are going to say bring a sacrifice. Bring a goat. My own is different.

AEB: So what are you called exactly?

Onisegun: *Onisegun*.

AEB: But I have heard *onisegun funfun* and *onisegun dudu*.

Onisegun: Yes.

AEB: But what is the difference? Is the *onisegun funfun* at the Baptist Hospital?

Onisegun: (Laughs). Yes.

AEB: Then I am wondering if there is something spiritual in what you do?

Onisegun: No.

AEB: So an *onisegun dudu* can be a Christian or a Muslim or a traditional religion follower?

Onisegun: Yes, but I am a Christian.

AEB: So the only thing that you do, your main job, is to treat people with illness?

Onisegun: Yes.

AEB: Are there certain illnesses where people would come to you instead of an *onisegun funfun*?

Onisegun: Most of the time, their work is the same. They might take them both places.

I then explored how an *onisegun dudu* in Yorubaland would be trained. He explained that he was the fourth generation of traditional healer within his family and that he was training "every one" of his children in the art of healing and in making natural medicines. He was continuing to learn himself from other *oniseguns*. He does not give "injections," but provides "natural" medicines for common ailments such as stomach problems. He said that if a patient needed any "tablets" or medications that one would normally buy from a chemist (pharmacy), he would "direct them to Baptist Hospital." I asked him if he simply sold medications or taught his patients to make medications for themselves. He said that he or his children always made the medications to sell. A woman hearing the question answered for him, "If he teaches, will they come again?"

Because malnutrition or *ile-tutu* so often goes untreated in Yorubaland, I was anxious to discover this *onisegun dudu's* level of understanding of nutrition-related illnesses. I found that he recognized the symptoms of *ile-tutu* and was willing to refer severe cases to the hospital or Kersey. He said that when mothers refused to "hear" that the child needs good food, he usually sent them to Kersey. However, his treatments were not always geared toward a change in diet. I asked him about his diagnosis and treatment:

AEB: If someone comes in with swelling, how do you know what is causing the illness? Do different things cause swelling?

Onisegun: I know two types. One is caused if the child is weaned and he is still thinking about the breast and doesn't have enough foods that make him strong (Yoruba way of

describing protein). Then the water changes and causes swelling. The other one is sickler (sickle cell anemia). It usually comes on the leg and fingers.

AEB: So you can tell the difference between the two?

Onisegun: Yes. Like for kwasorkor (Yoruba for "kwashiorkor") I give dried medicine like leaf and root. I will dry it. After that I will pound it. Put this in boiling water for the child. They will let the child forget the breast. When they forget about the breast, they can feed. It will help the child forget the breast. It is like stopping from smoking cigarettes.

Care among traditional healers, like care among any medical professionals, varies from caregiver to caregiver. Many of the *onisegun funfun* ("doctors of white medicine") practicing at the hospital had stories of poorly-treated or untreated ailments by traditional healers. At times the traditional healers would simply wait too long before referring a patient to a Western facility that was better equipped to treat the problem. Wounds, for example, were sometimes wrapped with traditional medicines and bandages and left covered until festering occurred and infection set in. In other cases, children with *ile-tutu* were treated with "spiritual cures" or natural cures for weeks before they were brought to the hospital or Kersey. Virtually every month a child arrived at Kersey, like Victoria, who was so severely malnourished that it was already too late. Several in years past have died en route to Kersey, the parents having waited until too late to seek help.

"Drug peddlers" and "petty nurses"

The problem of poorly-treated patients does not lie exclusively with traditional healers. As mentioned previously, the "medical" profession is a burgeoning one in Nigeria due to a host of economic factors. Because drug sales and medical care are essentially unregulated within the country at present, anyone can enter the field of medicine. One outgrowth of this has been the plethora of medicine sellers or *ologuns* in the villages.

Many of the medical staff of clinics such as Kersey refer to them as "drug peddlers." These medicine sellers commonly travel from village to village on a motorcycle and sell drugs directly to the villagers. Some called *alaberes* or "injection men" give only injections instead of selling tablets. These *ologuns* may have rudimentary medical knowledge of common ailments such as malaria, but their "expertise" is rarely based on formal training. While it is common for medical professionals in Nigeria to treat all sick children for malaria without a blood test, *ologuns* are typically unable to diagnosis any problems outside of malaria. Even when the diagnosis is correct, they are often unable to provide the appropriate medications. Staff members of the hospital and other clinics report that these *ologuns* often sell black market pharmaceuticals, many of which are out-of-date or otherwise questionable in origin. Even reputable hospitals and doctors within Nigeria and other African countries are battling problems with spurious medications (World Bank, 1994b). They often contain less medication than needed or are entirely without medicinal benefit. Combined with poor diagnosis, these questionable medications can be highly dangerous.

I questioned Moni, a World Vision staff member who travels from village to village conducting clinics, about drug peddlers:

AEB: These drug peddlers -- are some of them traditional healers? Are they just drug traders?

Moni: Yes, they are just traders. They will be running away from the police. They will be running away from us. They will just go to the market and buy drugs and be peddling it around the bush.

AEB: Oh... do they claim to be doctors? Or do they just claim to be sellers?

Moni: Yes, they will just bring the drugs and sell it to them (the villagers). "What is your problem?" "Back ache." They will sell you anything they want. And you know that they give injections?

AEB: Ah!

Moni: I'm telling you!

AEB: But do they tell the women "I am a doctor" or "I am trained"?

Moni: They will tell the women that they... some of them will call themselves nurses, some of them will call themselves dispensers. Even some of them call themselves doctors.

Another group of "medical professionals" are "petty nurses" or "house nurses."

The common Yoruba term for these nurses is *noosi agbeli*. Some of these nurses are not affiliated with any medical facility, but operate privately. Others serve as staff members in maternity or nursing clinics. Some have been trained either through formal education or apprenticeships, but others are entirely without training. Like *ologuns* they frequently diagnose illness and "prescribe" medications. Many of the doctors who were interviewed during this research indicated that maternity centers and petty nurses are generally known for poor levels of care. One problem is that women believe these nurses to be "doctors" because they given injections. Great faith is often placed in their ability to diagnose and treat. However, women commonly reported that they first went to maternity or nursing centers and after the problem did not resolve itself, they would end up at the hospital or a clinic like Kersey. Petty nurses are commonly sought for breast-feeding and nutritional problems in infants. Many women reported that they often "prescribed" expensive tinned milk or formula for babies who were failing to thrive. This was the case with one Kersey patient who was caring for her grandchild because the mother had died in childbirth. The grandmother immediately took the baby to a maternity center but was turned away

because they told her that they were "not taking motherless babies." She then went to a petty nurse at a nursing center. This nurse told her to give the baby Nan, a brand of powdered milk. Although the baby "took the milk well" he was not gaining weight. Eventually she came to Kersey and the baby began to thrive on soya milk. This scenario, however, is not uncommon as in many cases the milk "prescribed" is not specially formulated for babies. At other times, women cannot afford these expensive breast-milk substitutes for long and eventually slip into using low-protein substitutes such as *pap*. Furthermore, many of these nurses advocate the use of bottles with nipples. Kersey staff regularly ask women to show them what they are using to give milk. If the woman hands over a bottle with a nipple, the staff will immediately throw it away. Because proper sanitizing of bottles is virtually impossible in the average Nigerian household, Kersey insists that mothers feed their children milk from a cup with a spoon. This is just one example of how inexperienced and poorly-trained "nurses" add to the growing health and nutritional problems of children within Yorubaland.

Prioritization of Health-Care Options Among Yoruba Women of the Ogbomoso Zone

Scripts and plans are sequences of mental instructions that people use to deal with both familiar and unfamiliar situations. Scripts, according to Schank and Abelson (1977, 41) are "predetermined, stereotyped sequences of actions that define a well-known situation." Scripts, in other words, are ways of doing familiar activities in an almost pre-attentive or subconscious mode. The actions are not totally unconscious because the series of actions had to be, at one time, learned. Scripts can include any action from tying a shoe to driving a car and can vary greatly from one culture to the next. Plans, on the

other hand, are put into place when unexpected or uncommon events take place. They are scripts that suddenly require a greater level of conscious thought. A plan is "made up of general information about how actors achieve goals" (Schank and Abelson, 1977, 70). Plans allow people to use their innate knowledge of culture and the world around them to deal with events that may be unexpected, but are not totally outside the realm of normal.

Yoruba women in the Ogbomoso Zone have both scripts and plans that they utilize when dealing with a health-care need within their households. Some common ailments in children, such as diarrhea, are easily dealt with by using a script. Based on knowledge accrued from a variety of sources, women will follow a certain routine to deal with common health problems. For example, women who have been taught how to deal with childhood diarrhea by other village women will often limit liquids during an episode. Those exposed to health education, on the other hand, will increase liquids. As a World Vision baseline survey indicated, about 50% of the women in the Ogbomoso Zone villages they serve know to increase or maintain fluids to their children with diarrhea. This practice becomes a "script" which women consistently follow each time one of their children has diarrhea.

However, most Yoruba women eventually face health-care situations in which they are unable to treat the ailment themselves and medical attention must be sought. Although each woman's plan of action will depend on the severity and length of illness, most women follow the same "plan" or series of actions with each illness. During interviews and surveys I found that the plans for most women in villages surrounding the city of Ogbomoso are strikingly similar. I commonly asked women to list, in order, where they

sought medical care the last time one of their children became sick. In virtually all cases, women first sought care within the local area.

The possibilities for health care within the villages usually include *babalowses*, *onisekun dudu*, traditional midwives, *ologuns*, and village health post workers. Most women first seek medications for a "quick" cure. Typically this is initially from an *ologun* or *onisekun dudu*. In some cases, a woman might also seek help from a *babalowe*, but they were much less likely to admit this since few Yorubas -- less than 10% --still profess to be practitioners of traditional religion. If these remedies were not effective, many women moved on to other village medical sources. The length of time that elapsed between treatments varied from woman to woman, depending on her family situation and financial resources, and could have serious consequences for a child's health. Many times the plan is influenced or dictated by the husband or mother-in-law, rather than by the mother. The following excerpt from an interview was a typical exchange concerning the "plan" of women when their children become sick:

AEB: What did you notice about the baby that made you concerned that she was sick?

Mother: She was getting lean and had swollen feet, swollen face and hands.

AEB: When you noticed this what was the first thing that you did?

Mother: I went to a herbalist (can refer to a *babalowe* or *onisekun dudu*) and he did some kind of thing, to bathe the baby everyday.

AEB: Did the herbalist tell you what he thought was wrong with the baby?

Mother: He said that it was *ile-tutu*.

AEB: Did he tell you any foods to give to the baby or just to bathe her?

Mother: He didn't tell me anything, only the thing to give to her to bathe her everyday.

AEB: Did he ask you what you were feeding the baby?

Mother: He didn't ask me anything. He just said it was *ile-tutu*.

AEB: Who decided that you should go see the herbalist?

Mother: My mother-in-law.

AEB: How long did you bathe the baby before you decided to take her somewhere else?

Mother: One week.

AEB: Was the baby getting any better?

Mother: We watched and no improvement. No sign of improvement. So I told my husband and mother-in-law that I wanted to take the baby to Kersey.

In the interview above the mother ultimately was able to decide on the course of treatment for her child. However, in many households the mother is not allowed freedom of choice, even when local alternatives have failed. The following interview was with a Kersey who had eight children, four of whom had died. Her youngest, a two and a half year-old boy, had been suffering from health problems for about a year. I questioned the mother as to what health options she had utilized during that time:

AEB: Will you tell me all the places that you have taken the baby for his health?

Mother: I went to one *ologun* and then there is one that used to come to our village, an *alabere* ("injection man").

AEB: And he traveled to you?

Mother: Yes. I only went to those two places.

AEB: How many times did you see the *alabere*?

Mother: He sold me tonic and then tried injections. About 12 injections.

AEB: Did he tell you what he thought was wrong with the baby or did he just give injections?

Mother: He told me that it was *ile-tutu*. When he told me that it was *ile-tutu* I asked my husband to take the baby to the hospital and he said "no."

AEB: So is that why you continued to get the injections?

Mother: Yes.

AEB: When did you decide to come to Kersey?

Mother: When the baby was not getting better after about two weeks. His legs were swollen.

AEB: Did you ever go to a herbalist?

Mother: My husband did. He brought the drugs home and gave to the baby. He gave the child the drug and then second day repeated it, but the baby became restless.

AEB: So then did you stop giving it to him?

Mother: We stopped and rushed the baby here.

AEB: Did the father agree to bring the baby right away?

Mother: He agreed but did not follow me. Another patient followed me here. But he came to visit. He came yesterday.

AEB: How did you know about Kersey?

Mother: My mother-in-law had been here with a baby.

AEB: So she wanted you to come here?

Mother: Yes.

As these interviews indicate, women typically find no "cure" for nutritional disorders from traditional healers since many do not broach the subject of food with the mothers at all. Therefore, many women must move to the next "step" in their plan once the initial treatment fails. In some cases where the village health post was well-stocked

and the provider was trusted, a woman might next go to the village health post. However, because village health posts are often low on in-stock medications, they were usually not the health-care provider of choice. In other cases, women would "wait" for the next arrival of one of the traveling clinics, such as World Vision or Community Health. Although the services of these clinics are invaluable as they provide immunizations, well-baby check-ups and education, they are not critical-care clinics. Many of the nurses and staff members can identify common ailments and may even be able to treat the most common illnesses. However, when children are brought to the clinics in critical condition, they can only refer them to the hospital or Kersey. Many staff members expressed their concern over this common phenomenon. Mrs. Olupona, the head nurse from Community Health, said that it was not uncommon for their clinic to visit a village one month and treat a healthy child, but arrive again the next month to find that the child had died in the interim weeks.

Once all options for health care in the villages have been utilized, women will eventually seek help for their children in Ogbomoso. The health-care options in the city include chemists (pharmacies), nursing centers, maternity centers, health clinics such as Kersey, and the Ogbomoso Baptist Hospital. Frequently women will try the least expensive option, perhaps a petty nurse, and then move to the more expensive, more time-consuming options such as Kersey. Those who know of Kersey from other women may in fact, like the woman in the interview above, come immediately to Kersey once all village options have been exhausted.

In general most women interviewed had "plans" that first involved the utilization of all local sources and then the use of clinics within the city. The reasons for these plans are

numerous and include transportation and financial concerns, work and family pressures, and enduring belief in medications and spiritual cures. The following section will explore the case study of the declining client population at Kersey Children's Home as a means of illuminating the constraints faced by women in seeking health care at stationary clinics, where both the financial and time investments required from women are substantial.

The Diminishing Client Population at Kersey Children's Home: Constraints to the Use of Stationary Clinics in the Ogbomoso Zone

Records, literature and information from staff members indicate that patient population at Kersey Children's Home has dropped dramatically since the 1980s. Mrs. Ayanwale, a nursing assistant who has been at Kersey for over 20 years, discussed with me the typical scene at Kersey less than a decade ago. She recalled times when the in-patient number would be as high as 100 and the out-patients attending clinic would be as many as 350. On clinic days they would begin working at 6:00 a.m. and work until 8:30 p.m., until "we had to put the lanterns on." During the summer and fall of 1996, the average in-patient number was between 10 and 20 mothers with children and out-patients could be as few as 10 on a clinic day.

I interviewed several of the staff of Kersey in an attempt to discover why client population has dropped during a time in which malnutrition was becoming more widespread in the children of Yorubaland. Mrs. Akinafasi, the house mother, and Mrs. Ayanwale had obviously given this subject some deep consideration. Mrs. Ayanwale listed for me the reasons she believes that women are hesitant now to come to the clinic. These reasons include the increasing use of "drug peddlers" in the villages, the increasing

coverage of the mobile clinics such as World Vision and Community Health, the economy, the missing *oyinbos*, and rumors.

"Competition" from medicine sellers and mobile clinics

As discussed in detail above, a major reason for reluctance to travel to a stationary clinic in Ogbomoso is that many of the village women placed growing reliance on medicine sellers who are convenient and affordable as compared the hospital or clinics within the city. In addition, because World Vision and Community Health cover a large portion of the Ogbomoso Zone with their traveling clinics, many women are satisfied to wait until a clinic visit in order to deal with any health problems. World Vision, for example, only charged a nominal fee for immunizations and medications, but provided all other services free of charge since they were supported by international funds. Furthermore, the women of the villages are comfortable and familiar with the clinic workers and no travel is required. Because services are "delivered," the women do not have to miss a complete day's work of farming or trading.

"Competition" from women's household and financial responsibilities

Related to the issue discussed above are the financial concerns of Yoruba women. Most women are responsible for the maintenance of the household, both in terms of labor and finances. Especially in polygamous households, the majority of responsibilities for child care and well-being fall on the woman. However, in money matters, men and in-laws often hold the purse strings. I attempted to discover the way in which money was allocated and decisions were made in the typical Yoruba household. Most women were reluctant to discuss how they divided their earnings and financial responsibilities between themselves and their husbands; however, many of the clinic workers who face these issues

every day with patients were willing to discuss the impact that financial matters had on health-care seeking behavior among the women. Mrs. Akinafasi summed up a recurring sentiment about men's financial responsibilities within Yorubaland, "It is the work of the men to feed the children, but some men are not responsible. They just use their money as they like; they don't use it wisely. But women cannot just leave their children to just go hungry. If it just remains small bites for the woman she will give it to the children."

I also discussed the issue of the financial responsibilities of Yoruba men and women with Moni, a staff member at World Vision:

Moni: There is a problem in Nigeria now. The problem is that men must go out to work and bring in money. Women must go out to work and bring in money. And they will collect it together to send their children to school. So everyone one of them ... if a woman has a farm she will get the money and put it in her own account. So when it is time for their firstborn, for their children to go to school, the man can save out 5000 naira and the woman can go to her account and make 2000 naira to add to it. They spend money together but they do not keep it together.

AEB: Who do you think is responsible for buying food on a regular basis?

Moni: Well, like it has been set up in Yorubaland or in Nigeria, a man is supposed to, as head of the family, to provide for his family. Even according to the Word of God. But things have changed. In so many homes now, the woman is the bread-winner.

AEB: What will the man be doing with his money?

Moni: Ah, not every man has money. Some people, some men, they may be farming. They may get money to be farming, but the farm does not yield as they want. If it is the woman's trade that is boosting, the woman may get more money than the man. And they will spend it together.

AEB: They will? What if a man has many wives?

Moni: Ah. Well, if some men have so many wives.... The men that have so many wives, what I have learned from them is that it is the woman that caters for their children and the man will just be flinging about at the head of the family. He may give little, little to the women. Like he may distribute about 250 naira (about 3 U.S. dollars) every month to them. It is the duty of the women to go and work and to cater to their children.

I then questioned her about men's involvement in their children's health:

AEB: What happens if a woman is pregnant or nursing a baby?

Moni: Ah, if they are pregnant or nursing the baby, the man will give a little money to the woman.

AEB: But the woman has to keep on working?

Moni: (Laughs). Ah, pregnancy will not stop any Nigerian woman from farming, from even hoeing like this. Pregnancy is no hindrance to work. Even some women after farming on the farm, they will come home to deliver in the room on the same day.

AEB: But will most husbands give their wives more money, say, after they have a baby? Do they stay home and nurse their baby?

Moni: Well, between a month and three months after they have got a baby, the man can be giving a little money, but after that they will tell her to go and work. That is Nigerian for you. Even educated people, they will tell her, "You are working, go and take money out of your money and look after your baby."

AEB: But do you think that men take an active role, say in nutrition. . . . Do you think that if I ask a man, "What did your baby eat today?" would he know?

Moni: He will not know. Because it is not his duty. Some men, they will not even ask of the baby. They will go take a bath, enter their room and eat. "Where is my food?" After greeting, "Where is my food?" After eating, he will go in and sleep. So there is no need to ask the woman, "What about your baby, what is her problem?" Most are farmers here. They don't have time to bring lights like this and see their baby's face unless when the baby has problem and the mother is saying, "Come and look at this baby, now he is having problems."

Based on this and other interviews, it seems apparent that many women in Yorubaland are now shouldering much of the financial responsibility as well as the child-care responsibilities of the household. Because of these mounting pressures, women's time and resources are increasingly limited. This is a major constraint to women bringing children to Kersey, according to the staff. Women are frequently unwilling or unable to relinquish their economic and household duties in order to come to Kersey, unless it is an emergency. Most realize that a stay at Kersey involves many weeks away from their

farms, jobs, and families and can cost a substantial amount of money depending on the care they receive. Most month-long stays at Kersey cost an average of \$20 U.S., almost a month's wages for the average Nigerian. Furthermore, the woman is required to bring her own "load" or belongings and cook all meals for herself and most for her children.

"Competition" with rumors

Since Kersey is a stationary clinic that does not "advertise" in any way, its patients all find their way to the clinic through referral from other health-care providers or by word-of-mouth from former Kersey patients. During village visits, I did not find a single village in which no woman had ever been to Kersey. It has a long, rich history and remarkable "pull" from the villages surrounding Ogbomoso. The power of "word-of-mouth" among Yoruba women is an advantage in many ways. First of all, women often encourage other women to seek help for their children at Kersey or the other "soya" clinics of the area. Once a woman's child has been diagnosed and treated for *ile-tutu*, she is better equipped to help other mothers spot the symptoms in their children. Numerous Kersey patients who were interviewed reported that they had come only because another woman had urged them to do so. Furthermore, Kersey staff have designed their methods of teaching so that women can pass on their knowledge to other women in the village with ease. Most health principles are taught using song and dance and are easily recounted to others. Because most village women are illiterate and song and dance are of such vital cultural importance to Yoruba women, this is a wholly acceptable way to pass on information.

There are drawbacks, however, to the power of rumor and "word-of-mouth" among Yoruba women. Kersey staff members believe that many rumors have led to the

declining patient population. One grandmother who was caring for her motherless grandchild, for example, told me that she had not come to Kersey right away because she had heard that they were no longer taking "motherless" children. It was not until the child was close to death that she decided to come ask at Kersey for herself. Others reported that women were now reluctant to come to Kersey because the *oyinbos* ("Europeans") were no longer there. This missing ingredient caused many women to believe that Kersey had lost some of what made it different from other clinics and worried them from a financial standpoint as well, as will be discussed in the next section.

Themes Concerning the "Cultural Fit" of Clinics in the Ogbomoso Zone

Much has been written about the importance of "uniqueness of place" in medical institutions (Kearns, 1993). Cultural "fit" is undoubtedly an important factor in the quality of care and the extent of utilization of clinics within the Ogbomoso Zone. As discussed in previous chapters, the clinics studied in this research--Kersey Children's Home, World Vision, and Community Health--have made great efforts to provide care that is culturally suitable to the women they serve. They are run entirely by nationals, although they are supported in part by international non-governmental institutions. They are staffed mainly by Nigerian women, most of whom have no formal training in health care. Kersey, for example, has only two formally educated nurses on its staff and one part-time Nigerian doctor who sees patients at out-patient clinic twice a week. The care of all three clinics is designed specifically to meet the needs of the average patient who is a Yoruba mother with little or no formal education.

The following section examines certain aspects of these organizations for their cultural "fit" among the Yoruba women they serve. The first section will explore the

various groups of medical staff and the role each group plays in providing complete care. Each "level" of staff has a slightly different relationship and manner of dealing with patients than do the other staff members. The various "roles" played by each allows for dynamic care that appears to fill the physical, spiritual, and emotional needs of the women being served. The second section discusses the various methods of teaching and care that the clinics have adopted and examine their effectiveness and cultural suitability.

Medical Personnel and Their Impact on Health Care

There are generally three categories of health care workers in the clinics of the Ogbomoso Zone. The first type of workers are *oyinbos* or "Europeans." This literally means the "peeled one" and can refer to any non-national, although black visitors may be called *oyinbo dudu*, meaning in essence "black European." Although *oyinbos* no longer work directly in the three clinics studied in this research, each clinic has had a history of connection with international non-governmental organizations, such as the Southern Baptist Mission of the United States. The second type of worker is the "educated" Nigerian worker or staff member. For both Community Health and Kersey, the head nurse is Mrs. Olupona, a highly-educated Nigerian who is married to the director of World Vision, Dr. Olupona. There are a very few others, such as Titi at Kersey, that also have been formally educated and assume mainly administrative duties in the clinics. The final category is that of the less formally-educated worker in the clinics. Many of these people have been "trained" but do not have degrees. Some, like Mrs. Akinafasi and Mrs. Ayanwale at Kersey, have been "educated" and "trained" through numerous years of service. Their knowledge and understanding of health and nutrition problems and the realities of life in Nigeria are often much more acute than those of the more "educated"

staff members. Nevertheless, all three categories of workers have been critical in the formation and duration of these clinics in the Ogbomoso Zone. Furthermore, each adds a dimension to the relationships with clients that the others cannot.

Oyinbos: "The magic touch"

Although much of the research literature stresses the importance of culturally-specific health care, the issue of race seemed to surface in quite a different light in Yorubaland. As mentioned previously, many of the clinics operating in the Ogbomoso Zone are, or have been, operated, staffed or funded by international organizations at some point. Kersey and Community Health are both associated with Baptist Hospital, which is partially funded and staffed by international missions and missionaries. World Vision was operated and funded by the United States-based organization of that same name and also funded in part by the United States government. Although none of the organizations are now directly run by "Europeans" or *oyinbos*, they are associated, at least in people's minds, with non-nationals or expatriates. While many studies have found that the presence of staff persons who are not of the dominant culture group can be intimidating to many nationals in traditional societies, this did not appear to be a deterrent to the use of the clinics within the Ogbomoso Zone. Several Nigerian workers expressed the sentiment that they believed client population had actually fallen at Kersey in response to losing all non-nationals on the staff. The last full-time American nurse, Keri Collins, left Kersey in 1995.

There are three possible reasons for this reaction. First of all, there is an apparent connection in women's minds between the presence of *oyinbos* and the quality of care provided by these clinics. The availability of medicine, for example, is quite important to the Yoruba women as evidenced in this study as well as others in Nigeria and elsewhere in

Africa (World Bank, 1994a). Non-governmental or private institutions have traditionally stocked more medicine than governmental clinics in Nigeria. As word spreads that *oyinbos* are no longer at a clinic, many women believe that medications and other supplies may also be gone. Furthermore, although many women wait until the last minute to bring their ailing children to Western facilities, they commonly have strong faith in an *oyinbo's* ability to "save" a child. While traditional medicine is adequate for small illnesses and injuries, Western care is customarily the health care of choice during what are viewed as emergencies.

The second reason for distress over losing the non-nationals is that this is tantamount to losing "magic" to many women. One Kersey nurse explained that many women want *oyinbos* to touch their babies and become very upset if a child is handed to a "black" staff member rather than to an *oyinbo*. When asked what magic she thought these women believed an *oyinbo* to have, she answered that she really did not know. Some may associate *oyinbos* necessarily with Christianity, especially in those clinics expressly connected with Christian organizations, and thus believe that prayers or intervention from God might help heal their babies. Others are simply awed by the actual touch of white skin. Many children having never seen or touched an *oyinbo* are frightened and pull back in fear from the actual touch of an *oyinbo* although they are openly fascinated as well. The physical and spiritual differences of *oyinbos* seem to hold mystery and magic to many women who believe that within these differences lies power to heal.

The third area of impact of *oyinbos* on the health-care clinics studied is that of money or financial concerns. As discussed in previous sections, financial hardship appears to be a major contributing factor to the decline of client population at Kersey Children's

Home. As inflation continues to rise, women are working longer hours for less purchasing-power. Therefore, not only do they have less money to allot to health care, especially to "preventative" care, but they are also less able to leave their work for a month's stay at the clinic. Even a day away for outpatient care is commonly believed untenable. However, as Mrs. Akinafasi at Kersey said, if a bill for a patient is 50 naira, "the *oyinbo* might reach into her pocket and pull out 20 naira to go toward the bill. We (meaning Nigerian staff) have too many family responsibilities to be able to do that." She went on to explain that *oyinbos* can "afford to do what they want," but that Yoruba women had an obligation to take care of the extended family.

The "educated" staff members: "You have to pet them."

The underlying theme of extended family and community permeates health care as well as social life in Yorubaland. Many of the staff members view themselves and are treated as older, wiser family members. In many cases, clients have been referred to Kersey or some other clinic by a former client or by a family member that has a connection to some of the staff of the clinic. These bonds, no matter how remote, often provide the needed link or place the client under the "umbrella" of shared community with the staff. A protective spirit is frequently assumed by the staff members either for the mother herself or for her children. Based on this almost maternal bond between staff and patients, there is commonly an atmosphere of freedom among the two. At times intimidation or humor may be used to elicit the truth from a woman or to impress upon a woman the need for a certain action or change in behavior. This is particularly true during the "opening interview" when women come to Kersey for the first time in which the nurse questions the

mother about how and why she has come to Kersey and how and why the child has become ill or malnourished.

Victoria Olawuyi, a seven year-old child admitted to Kersey in early September of 1996 provides an vivid illustration of how the rapport between client and staff can be critical in eliciting important medical history and information. When Victoria was admitted she weighed 10.4 kilograms, a little less than 23 pounds. This is the average weight for a healthy one-year old in industrialized countries. She was brought to Kersey by her father and his mother. Titi, the only full-time nurse at Kersey with a college degree in nursing, immediately began questioning the father and grandmother as to how Victoria came to be so severely malnourished. Titi believed, she told me later, that the child had been with the grandmother; however, at first the grandmother denied this vehemently since she appeared shamed by the condition of the child. This would not be an uncommon situation in Yorubaland as grandmothers often have the care of their grandchildren either by their own request or by the request of the parents. In many cases the mother-in-law, or father's mother, insists that she be given care of a child or children. A mother is usually unable to refuse as that would make the father appear to not have control of his own family. Since Titi suspected that this was the case with this family, she pushed the grandmother, telling her that "there is no peace for liars." The grandmother finally said, "There will be peace" and proceeded to admit that the child had gotten this severely malnourished under her care.

This was a case in which a much younger, unmarried woman, Titi, was able to speak very frankly to an older woman and encourage her to be honest. Therefore, although age is extremely important in the Yoruba culture, it was secondary to "authority"

in this situation. Titi deals with patients in a direct manner that bespeaks her confidence and "position" within Kersey. However, Titi admitted that she "petted" the grandmother in order to get her to admit the truth. Although the statement sounded harsh, it was a indirect, almost teasing way to open an honest dialogue.

The workers: "You can't let them think that you are an educated somebody."

When speaking to a Kersey staff member about the employees at Kersey, they often referred to themselves as "workers" unless they were one of the two "real" nurses. Although Mrs. Akinafasi has been at Kersey for more than thirty years, lives on the compound and essentially runs the everyday operations of the clinic, she was quick to correct me when I called her the "director." She insists that she is simply the "house mother." This distinction is in fact an important one in relations with the patients of Kersey. While *oyinbos* are thought "magical" in some ways and nurses are given a form of respect, workers are listened to and talked to the most openly and honestly of all the clinic staff members.

Mrs. Ayanwale, a middle-aged Kersey worker with grown children, has been at Kersey for almost twenty years. She was "assigned" to help me find and interview former Kersey patients within Ogbomosho and proved to be invaluable in terms of her knowledge of the city, her memory of patients, her rapport with people, and her succinct way of explaining cultural issues. As we interviewed women who had formerly been clients at Kersey, she could visibly put those around her at ease, assuring them that I was only a student interested "in helping our children" and urged them to tell me the truth in all matters. I was surprised at the deference the women showed toward Mrs. Ayanwale, but

also the happiness they expressed in seeing her. It was a striking change from the attitude and demeanor of Mrs. Magbagbeola, my usual interpreter, who demanded, rather than asked for, cooperation. Mrs. Magbagbeola, who was an older woman who had worked at Baptist Hospital as a translator for years, was more of one in "authority" than one who would be considered a friend with noble intentions. The obvious contrast in style of and reaction to these women was an illustration of the general principle of seniority within Yoruba society, even among women. As Bascom and others have noted in past research, age is only one of the bases for seniority in Yoruba society (Bascom, 1969; Sudarkasa, 1985).

Seniority and familiarity can work in various ways to facilitate or impede relations with women seeking health care. An incident with one of the Kersey patients best illustrates the life-and-death importance of relationships with clients. Because there are so many taboos and deeply-imbedded traditions within Yoruba society, many women are reluctant to be truthful about some issues. Mrs. Ayanwale told me of a woman who was a former client of Kersey who had a baby that was becoming lean. There was a "rumor" among the women that although the baby was only three months old, the mother was expecting another child. This can be a critical development in the life of the older child as a Yoruba woman will seldom continue breast-feeding a child once she knows that she is pregnant again. This is one of the main reasons for such a high incidence of malnutrition among the "firstborns" in a family. Mrs. Ayanwale came across this woman in town and noticed that the baby was indeed very small and sickly in appearance. A few women were standing with the mother teasing her that she was pregnant again. Because many women are not sexually active until their child is weaned, this could be a source of great

embarrassment to a woman in Yoruba culture. She was denying her pregnancy to the other women. Mrs. Ayanwale took her aside and quietly asked her, "Are you giving the baby breast?" "Yes," the woman told her. Mrs. Ayanwale replied, "Look at how small the baby is. You are not giving him the breast." When the woman again denied that she had weaned the child, Mrs. Ayanwale began reassuring her by telling her not to listen to the other women. "Why should they be making fun? Your husband is the owner." Finally the woman admitted that she was indeed pregnant and began to cry. Mrs. Ayanwale comforted the woman and then devised a way in which to properly feed the baby without having others know of her pregnancy too soon.

I asked Mrs. Ayanwale how she was able to make women open up and be honest with her, she answered that if you were pleasant and quick to laugh, then women will tell you the truth. In addition, she stressed, "You can't let them think that you are an educated somebody."

The Impact of Procedures and Teaching Methods on Clinic Effectiveness

During interviews with staff members from Kersey, World Vision and Community Health, several recurrent themes related to teaching patients about food, sanitation and general health principles surfaced. Staff members consistently reiterated the importance of teaching women "on their own level" and in ways in which they could easily relate. Furthermore, they stressed the significance of rules and rewards in their clinic procedures. Requiring women to carry out simple tasks and in essence "invest" themselves in the programs engendered better results than programs in which everything was "free" to patients, both in terms of money and effort. Likewise, a reward system was critical to keeping women committed. While tangible goods such as dishes or trinkets were

sometimes used as rewards, so were public praise and affirmation. Finally, community involvement was considered to be key to program success and longevity, especially among the traveling clinics. These themes and their impact on clinic care are discussed in the following sections.

Teaching cause and effect

As discussed above, one of the most difficult constraints to obtaining health care for children who are ill or malnourished in Yorubaland is mothers' failure to recognize symptoms or to know when to seek medical help. An accompanying problem, also discussed above, is that many traditional healers, hospitals, medicine sellers, and clinics typically do not inform parents fully about what ailments they or their children are suffering from. Nor do they clearly label medicines or explain their usage. The cultural and logistical reasons for these practices are not always clear. The implications, however, are clear, especially in the case of malnutrition when a woman's lack of knowledge of food and its relationship to health can have life-threatening consequences for children. Although the clinics studied in this research also fail in some of these aspects as well, Kersey and World Vision and Community Health have made attempts to rectify this situation.

All three clinics have adopted teaching tools that give women a better understanding of illness and its causes. Especially in the treatment of malnutrition, the personnel of these clinics recognize that unless a woman truly understands the connection between food and health, children will suffer from persistent health problems. When most women attend clinics for the first time, their understanding of cause and effect is often limited. When questioning the staff about the average woman's ability to connect lack of

proper food with malnutrition or *ile-tutu*, they consistently answered, "They do not know." Understanding of sanitation and its impact on health presents a similar problem.

The challenge in teaching women cause and effect in illness is twofold. First of all, the clinic staff must present the information in such a way that it is easily comprehended by women who are often without formal education. This means that pamphlets or lectures containing complicated explanations of disease and human physiology are unwarranted. For example, one worker at World Vision told me how she explains to mothers that their children need meat and eggs more than adults. This is a difficult concept for many women to grasp since it goes against culturally-established rules in which men eat the "choice" foods of the household. It also goes against logic for many women since children are smaller than adults and must therefore need less food than adults. Furthermore, since many women still hold to the belief that meat will "make children steal," it is a challenge to get women to understand the importance of protein in their children's diets. This World Vision worker would say to them, "If you take good care of those shoes, you can still be wearing them in five or six years. Now look at your child's foot. No matter how well you take care of that shoe, he will grow out of it in six months. If they don't, then something is wrong. They are not growing." Protein, she would then explain, is the food that makes people grow and without it the children will not grow.

Secondly, even if a woman understands what she is being told, she must believe it. Deeply-rooted beliefs and taboos may prevent a woman from adopting certain health-care practices. Mrs. Akinafasi, "house mother" at Kersey, explained several ways in which she and the staff work to overcome these obstacles in teaching women about health and nutrition. First of all, Mrs. Akinafasi stresses the importance of the in-patient program at

Kersey in which patients and their children live, cook, and eat at the clinic during month-long stays. During the extended stay, staff members are able to teach, observe and intervene in the health practices of the mothers. Constant encouragement and affirmation help promote long-term changes. At the end of a mother's stay the staff members are careful to tell the mother that the child has not been cured by medication. In some cases, sugar pills have been given to the child during their stay in order to satisfy the mother. But before the mother leaves, however, Kersey staff will tell them the truth about the medications and add, "Food cured your child, not drugs."

While at the clinic, women are required to attend teaching sessions in which the staff members concentrate either on nutrition, sanitation or immunizations. Mrs. Akinafasi uses an illustration that women are familiar with in order to stress the interdependence of these three elements in children's health. She places three rocks on the ground with a pot on top as if she were beginning to cook. She then explains to the women that one rock is "good food," another is a "clean environment" and the third is "immunizations." She takes away a rock from beneath the pot and it begins to wobble. "What happens when one of the three is gone?" she asks. Then she removes a second rock and the pot topples over completely. "This is what happens to our children, when we don't give all three," she tells them.

All three "soya" clinics attempt to use illustrations and customs that women are familiar with in order to promote understanding. One way in which they do this is through song and dance. Because song and dance are an integral part of the Yoruba culture and are customarily used to pass on legend and history, this is a natural form of learning for Yoruba women. During soya classes at Kersey, for example, women will sit quietly

during explanations of how to prepare soya; however, many are openly distracted.

However, when the "teacher" breaks into a song and dance about the advantages of soya and ways of preparing it, the women happily jump to their feet with their "backed" babies and begin to sing and dance. World Vision expands the use of music by broadcasting songs from their trucks as they ride through villages "gathering" women for the clinic. These songs are Yoruba-style music with lyrics pertaining to subjects ranging from waste disposal to sexually-transmitted disease. Topics that may ordinarily be sensitive ones are dealt with openly and given a touch of humor when put to music.

Rules and rewards

Another recurring theme at the "soya" clinics is that of rules and rewards. Staff members recognize that women must "invest" in treatment before they will become truly committed to adopting the practices being taught. For this reason, each of the clinics require certain things of the mothers ranging from small monetary investments to time investments. At World Vision and Community Health clinics, for example, women are required to keep and return with their children's health cards that record the weight, immunizations, and past illness. Women who forget this small task are severely chastised by staff who see this as an indication of their lack of commitment to their child's health.

At Kersey, on the other hand, women are given a talk about the "rules" of Kersey upon admittance. Titi, one of the nurses, explained that the three things required of a mother are obedience, cleanliness, and faith. The first rule is that the mother must "obey" or respond to requests of the staff. One of the main problems among Kersey patients evidently is that mothers will resist giving their children the soya foods prepared by the staff. Many times the staff will give the mothers soya foods to feed their baby, but the

mother will hide the food under the bed and throw it out later. One of the Kersey workers explained that mothers will do this because malnourished children, especially those who are severely malnourished, will often resist eating. It is very difficult, time-consuming and frustrating to try to cajole them to eat. Many mothers simply do not want to deal with the frustration of trying to get a child to eat. However, Kersey staff realize that mothers must invest the time and effort if the children are to survive. The other rules, Titi explained in one interview, was that mothers must keep themselves, their children and their environment clean and that mothers must have "faith." Staff members tell mothers that "children will only live if you believe that they will live."

While these rules and expectations are undoubtedly an important part of the teaching process, a reward system is also used to insure consistency and commitment among the mothers. Some of these rewards are tangible goods such as bowls or t-shirts while others are less tangible like words of praise or affirmation. Moni, a worker with World Vision, talked about the tangible "incentives" used to encourage women to bring their children to the clinic. For instance, if a woman brings her child for all the immunizations up to ten months, World Vision gives them a small cooler. As Moni said, "We give them cooler. We give them. And if they come for weighing for 4 months and they gained weight we give them one small bowl. Free of charge." However, they also use the reward of praise, especially in the clinic situation. At all three clinics, the staff members begin each session with a "review" of the last topic discussed at the previous clinic. As if in a classroom, the staff will ask a particular question such as "At what ages do you bring a child for immunizations?" If a woman answers correctly, she will be praised or at times given a small token of reward. If no one answers, the crowd will be

admonished that they "must do better." Especially in a village or community-setting, these public successes or failures can be of great importance to the women attending the clinic. Mothers who have big, healthy, breast-fed babies, for example, are routinely praised in front of others in order to "set the example."

Community involvement

Another critical component in the success or failure of these clinics is the utilization of community involvement. Just as "investment" and incentives are important to individual mothers, they are equally important to communities who support the "traveling" clinics. Unless a community is committed to the clinics and their own health posts, the programs will not thrive. Based on this principle, World Vision and Community Health both established village committees and health posts and trained community health workers. World Vision, for example, gave extensive training to Community Health Workers, who then operated the village health posts within their communities. Depending on the level of investment of the community, the village health post could be a single room equipped with only the bare essentials or could be a complete building with all the basic medications and equipment. They also trained Community Nutrition Promoters, although less intensively. These were village women who were trained in preparing soya foods who would be responsible for the "meal" served at each clinic. One World Vision staff member explained that their main function was to keep the women "invested" in the program. The responsibility of being a "team member" helped keep at least these women faithful and dedicated to clinic participation. For this reason, there was no limit on the number of Community Nutrition Promoters within a single village.

The impact of an involved community was clearly illustrated during a day with Community Health in which clinics were held in two villages. In the first village, the "health post" was the front porch of a community leader's house. Attendance at the clinic was sparse with only about ten women and their children assembling. Participation and enthusiasm were low as well. During the "teaching" part of the clinic, the women were lethargic and unable to answer any questions about the health issues taught at the previous clinic. The next village, however, was in stark contrast to the first. As we drove into the village, a crowd of women, all dressed in their finest clothes, gathered around the vehicles, many of them already singing their clinic songs. Mrs. Olupona, the head nurse explained that clinic day was a "big event" in which women dressed themselves and their children in their nicest clothes. The health post was a new building, built specifically for this purpose. Benches had been neatly arranged inside and the walls were covered with posters concerning health matters. Participation in the clinic was lively and enthusiastic with animated answers to health questions and much laughter and banter among the women.

I was amazed by the contrast between the villages and asked Mrs. Olupona and the other staff members to explain the differences in response in two villages less than ten miles from each other. Mrs. Olupona said directly, "It is the committees." In the first village the committee, typically composed of the male village elders and respected community leaders, was apathetic and uncommitted to the health post and program. They rarely carried out their duties of "advertisement" about clinic days and had not invested in a health post. In the second village, however, the committee was enthusiastic and wholly committed to the program, as evidenced by the new health post they had raised funds to

build. The committees and community leaders, she explained, were the key to clinic success. Once the village leaders became committed, the rest of the village would follow. Without their support, success was rare.

Conclusion

The cultural themes discussed in this chapter are among the many that impact the type and quality of health-care that women seek and receive in the Ogbomoso Zone. Although important to all types of health-care seeking behavior, these themes are particularly important in women's utilization of the "soya" clinics studied in this research. Especially with nutrition problems in children, mothers must first be able to recognize the telling symptoms before they seek care. As discussed in the chapter, they often first seek care from local traditional healers who may or may not have an adequate understanding of the connection between food and health. In many interviews with health-care providers, both traditional and "Western" in the Ogbomoso Zone, it became evident that while some may have understanding, their treatment does not always reflect their knowledge. For example, one *onisekun* indicated that he recognized *ile-tutu* in children and realized that it was connected to diet and yet still first "prescribed" daily baths for the ill child in a special herbal soap. In other situations, even when the "prescription" is appropriate to the ailment, a child may be in such serious condition that more intensive medical care is required. In any situation, if a "cure" is not forthcoming from traditional treatments, a mother will then typically seek health-care from one of the soya clinics.

The care given at the three soya clinics examined in this paper are similar in many ways. The staff, ranging from trained to untrained, appear to be cognizant of the fact that culturally appropriate care is needed in order to "reach" the Yoruba women they treat.

Since most of the women seen at the clinics are generally uneducated or have a very few years of primary education, teaching methods and clinic procedures must be designed and carried out in such a way that these women can truly grasp the connection between health and food, sanitation, and immunizations. Their focus on diet in recent years has been directed at teaching women to prepare soya because of its availability, affordability and adaptability to the traditional diet. However, most staff members of these clinics realize that overcoming the obstacles to adoption is difficult. Women are faced with a host of outside stresses from the economy, their work and families, which exert a strong influence on their choices regarding food and health. This chapter attempted to highlight a few of the ways in which the clinics work to overcome the structural, cultural and institutional constraints to women adopting improved foodways and health habits within the Ogbomoso Zone. The following chapter will briefly summarize the major issues explored within this study and the possible avenues in which this research can be expanded and improved upon.

CHAPTER 7

SUMMARY AND CONCLUSIONS

Hunger and malnutrition are growing problems in many of the developing areas of the world. Sub-Saharan Africa is at particular risk as agricultural production on the continent has failed to keep pace with a rapidly-growing population. Other factors such as political instability, government corruption, economic inflexibility, and civil unrest have added to the health and nutritional problems faced by the populations of the African countries. Nigeria, with a population well over 100 million and a government and economy in chaos, is one of the countries most likely to continue to face nutritional decline among its people.

Just as the factors contributing to health and nutritional problems in Nigeria are numerous, so are the potential solutions to those problems. Development specialists, agricultural experts, governmental institutions, and international organizations have all joined the ranks of those seeking to help eradicate nutritional problems among the Nigerian population. One growing area of interest in the southwest of Nigeria, Yourbaland, has been the potential benefits of the incorporation of soya into the traditional diet. Many organizations, ranging from medical facilities to church groups, have focused increasing attention on the "social marketing" among Yoruba women, particularly those weaning children. This research analyzed these efforts and identified some of the specific constraints and motivations to soya adoption among Yoruba women of the Ogbomoso

Zone. In addition, this study explored the larger cultural themes that surround the adoption of improved health and nutritional practices within the area.

Soya Adoption in the Ogbomoso Zone

The social marketing of soya in Nigeria has been among the strongest and most widespread in the Ogbomoso Zone of Yorubaland. A large part of this focus has been due to the intense efforts of IITA in "marketing" soya and training people to teach soya preparation within the area. In conjunction with IITA, the medical facilities and nutritional clinics of the area have concentrated much of their efforts on promoting the adoption of soya over the past ten years. Because of its affordability and adaptability to the traditional diet, it has been considered as a suitable alternative to the high-protein foods that are at present too expensive for the average Nigerian to purchase on a regular basis. Its greatest potential is perhaps as a weaning food since so many children die during the vulnerable months after they have been weaned.

The advantages of soya from a medical and nutritional standpoint are numerous; however, in order for a food, or any innovation, to be adopted, it must first be perceived as needed by the targeted population. As this research has shown, many Yoruba women have indeed found soya to be a perceived need and are preparing it on a regular basis. Of the 70 women surveyed in the final sample group of this study, 77% were "adopters" of soya, meaning that they prepared soya for their families twice a week or more. Those who were "non-adopters" were more likely to never prepare while many "adopters" prepared soya daily. (See Figure 7-1.)

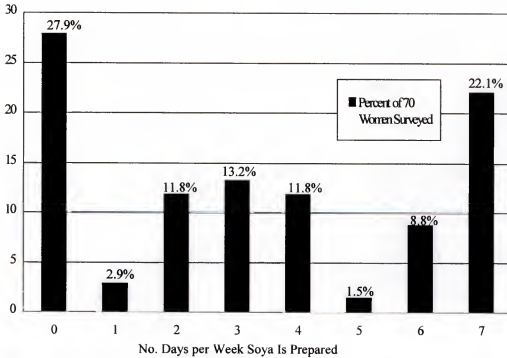


Figure 7-1: Weekly Soya Preparation Rates of 70 Women Surveyed

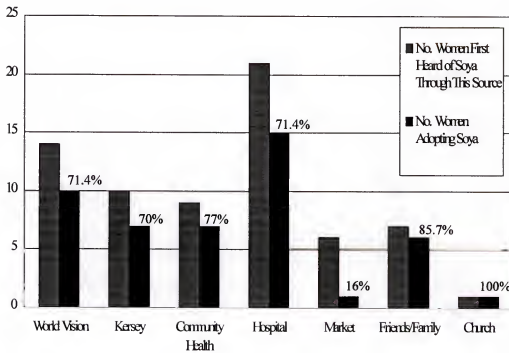


Figure 7-2: Soya Adoption Rates Through Various Sources

Motivations for women's willingness to incorporate soya into their diets were most often based on perceived health needs, followed by economic incentives. The majority of women surveyed, even non-adopters, reported that they had heard that soya was "good for the body" or "provided blood." Others reported that soya was like meat, fish and eggs; it was a food that made people "strong" or helped them "grow."

Despite soya's growing acceptance among the Yoruba women of the Ogbomoso Zone, there are still substantial barriers to its long-term acceptance as staple food. First of all, as findings from the composite decision tree revealed, women are still unsure about its preparation and some have been frightened by media reports concerning the adverse affects of beans that are not prepared correctly. Others are simply discouraged by the amount of time required to prepare soya foods, especially soya cheese and milk, and are unwilling or unable to devote the time necessary to make it a part of their families' diets. Furthermore, while soya is a good price compared to other similar foods, such as the cowpea or melon seed, it is considered by some to be *epamu*, not a "real food," and therefore unaffordable. Due to the many growing economic stresses in Nigeria at this time, many women will not devote their limited time and resources to the adoption of a "new" food, especially if the taste and preparation are still unfamiliar to them.

An important issue in the adoption of soya among Yoruba women which underlies all these constraints is the autonomy and power that a woman has to make and carry out decisions within her own household. During both the ethnographic interview and survey phases of this research, many women reported that they were not the decision-makers in their households in food and farming concerns. Although all village women indicated that they farmed their own plot of land, many indicated that their husbands either made the

decision as to what they would farm or at least had some input in the decisions made. As women who grow soya are much more likely to prepare soya for their families, this can be a major constraining factor in soya's continued production and use. Furthermore, 50% of the women surveyed indicated that either the husband, senior wife or in-laws made the decisions about what foods the wife would prepare for the family. Therefore, in these situations, even if the woman viewed soya as a perceived need within the household, she would first have to convince the "decision-makers" to accept it as well.

The issues surrounding adoption of a "new" food in Yorubaland are complex due to the many cultural implications associated with food and diet in the Yoruba household. Soya appears to be "catching on" at present because of growing health and economic problems within the area; however, long-term adoption is still in question. Although this research did not explore the long-term habits of soya users, there are indications that once soya has become established in the diet, it may well become a permanent part of the Yoruba diet. For example, when I questioned one woman as to whether she would continue to use soya once her child was well and the economy had improved, she answered, "Why would we stop eating it now that we are familiar with it?" Once women have learned to prepare soya and have perfected the technique, thus lessening the amount of time spent in preparation, one of the major obstacles to adoption has been overcome. An historical example of this has been the adoption of cassava into the Yoruba diet. Although not indigenous to Nigeria and still not generally preferred to yam, it is nevertheless widely grown and used on a daily basis, despite its time requirements for preparation.

Women's Understanding of Illness and Malnutrition and the Adoption of Soya

One of the key elements in the adoption of soya has been its health and nutritional benefits, especially to a population whose diets are lacking in protein-rich foods. However, as mentioned above, any adoption of a dietary change or health practice must first be perceived as a needed change by the targeted population. It is not enough for health professionals to tell women that they need soya in their diet--the women themselves must see the need as worthy of their time, effort and resources. The three clinics studied in this research--Kersey Children's Home, World Vision, and Community Health--have all done a remarkable job in marketing soya within the Ogbomoso Zone, both in terms of numbers of women they have reached and success in promoting adoption. Although the numbers from this study are too small to be considered statistically significant, surveys responses showed that of Kersey, World Vision, and Community Health clients, approximately 75% of the women actually "adopt" soya. This appears to be a much stronger adoption rate than among women who heard of soya from the market or media. (See Figure 7-2.)

As discussed in Chapter 6, one of the key elements in the success of these "soya" clinics has been their methods of teaching women the link between food and health. This study found there was a significant correlation between women's reported knowledge of *ile-tutu* (malnutrition) and their adoption of soya. All three clinics have embraced teaching methods and operational procedures that are culturally appropriate and widely effective among generally uneducated, rural Yoruba women. The dynamics of the relationships between staff members and patients, for example, have evolved in such a way that each

"level" of personnel are uniquely suited to meeting either the physical, spiritual or emotional needs of patients and their children.

The continued efforts and quality of care provided by these clinics will depend on a number of factors including many structural factors such as the stability of the Nigerian government and the development of the economy. Already World Vision has been forced to essentially close its doors due to the United State's refusal to continue meeting funds in the present political environment. Although they have attempted to turn over their work to the local governments, the continued success of the program is in question due to past corruption and inefficiencies on the local level. The funds of Kersey and Community Health are more assured because of their lack of entanglements with any specific government; however, there is a continual struggle for adequate funds and transportation in these clinics as well.

Opportunities for Future Research

There are several potential avenues for future research in the Yoruba area of southwest Nigeria regarding nutritional and health issues and the impact of structural, institutional, and cultural factors on these issues. In this research, the institutional impact, specifically that of medical facilities within the area, and the cultural impact on soya adoption were of primary concern. Although there are a range of institutional and cultural issues left to be explored, like the effect of gender issues on women's decision-making within the household, a range of structural issues remain to be explored as well.

Although it is difficult to predict just how structural adjustment programs will affect certain segments of society, especially in countries such as Nigeria where data are scarce, it can be safely said that Yoruba women in Oyo State have felt some adverse

effects of the SAP in Nigeria. Because most women are involved in the informal sector in some manner, the decline in informal sector incomes has hurt most households. As the formal sector has been scaled back, more people, usually men, have entered into the informal sector causing increased competition and lowered financial returns (Trager and Osinulu, 1991). Furthermore, reductions in subsidies and services have affected women's abilities to access resources for farming. While increased agricultural production may benefit women in the long run through increased processing and trading activities, opportunities for increased agricultural production for women themselves seems unlikely without the establishment of programs specifically aimed at women farmers. Organizations formed and run by Nigerian women themselves, rather than the government, have been the most successful in this arena.

It would be difficult from this study to draw many concrete conclusions regarding the specific effects of structural adjustment programs on Yoruba women in the Ogbomoso Zone. There are two main reasons for this. First of all, most women interviewed were unlikely to be aware of the specific government programs and austerity measures being undertaken. While all realized that the naira buys less than it used to and that wages have not increased in turn, none verbalized in specific terms any views concerning the exact cause of these hardships other than complaining of the corrupt government in general. The second reason for this gap in this study is women's general unwillingness to discuss exact financial issues with me. Older women were commonly more forthright and were able to provide useful perspective on the economic changes through the years. Younger women, especially those in polygamous relationships or with husbands in close proximity during the interview, were unwilling to discuss the financial situation of their household.

Very few interviews were conducted in isolation and thus an audience was most often present. In this situation a woman was generally disinclined to admit that her husband gave her very little financial support or that the household was unable to afford basic necessities or staple foods. Most survey respondents did acknowledge that they were unable to buy specialty foods, such as tea, milk or bread, but very few would elaborate any further.

The only generalized conclusion, therefore, that can be drawn concerning the larger structural situation and its effect on Yoruba women is that financial hardships are affecting the health of women and their children. Food is admittedly more expensive and the purchasing power of wages is declining steadily. More men and family members, once working in cities, are returning home to farm and using the limited family farm land. Competition from men in all informal sectors are crowding economic areas that once almost exclusively belonged to women. Growing financial responsibilities are being placed on women for providing for both nuclear and extended family. Work loads and work time are increasing. Poor government policy, dating back to the oil boom years and beyond, can be blamed for much of these hardships. Government corruption in which enormous oil profits are being skimmed and redirected into individual's pockets are undoubtedly to blame as well.

The plethora of issues surrounding these structural factors certainly call for further study. A longitudinal study, for example, would be beneficial in understanding the impact of the economy on individual household's decisions concerning food and health decisions. If the economy improves, for instance, will soya production and consumption continue to increase, level off, or fade away? Will the composite decision tree developed in this study

be valid in five or ten years? Once the novelty of soya has disappeared and people have become familiar with its preparation and taste, what factors will most affect its consumption and production?

Immediate plans for a continuation of this research include a comparative study of the adoption of specific dietary changes for health purposes within nutritional clinics in the United States. The Women, Infants and Children's program, sponsored by the United States government, is a program similar in many aspects to the nutritional clinics studied within Nigeria in that its main purpose is to provide nutritional counseling and promote understanding of food and health issues. I plan to conduct similar ethnographic research and model a similar food decision among the women that it serves in order to discover any parallels that may exist in food adoption across the varying cultural realms.

Is Soya a Success Story in the Ogbomoso Zone?

As discussed in earlier chapters, hunger and malnutrition are serious problems in a large portion of the world, especially in sub-Saharan Africa which is generally experiencing declining food production and burgeoning population growth. At present, numerous "solutions," ranging from increased agricultural production to better food distribution to improved education, have been proposed for combating hunger and malnutrition throughout the world. However, no one solution, or even combination of solutions, appears to work in all areas. The structural, institutional, and cultural geography of each country, region, and even village varies greatly from one place to the next, making a single formula for hunger alleviation impossible. As much of the recent literature reflects, the local solution, which takes into account the "uniqueness of place" appears to be the only way to successfully combat nutrition and hunger problems.

Although some avenues of progress, such as improved agricultural production and intensified health and nutrition education, are needed in almost every developing country in the world, the way in which these programs are instituted must be "tailor-made" for each region, and to some extent, each individual community.

This research has explored in detail one such "solution" to a particular nutrition problem, protein-energy malnutrition, in the Yoruba communities of the Ogbomoso Zone. Because women of the region are the primary caregivers for children and hold the majority of the responsibility for food procurement and preparation in the average household, women's decisions concerning soya adoption, among other food and health decisions, were studied indepthly. Through ethnographic interviews, surveys, and decision-tree modeling, it was concluded that although serious constraints to soya adoption exist among Yoruba women, the motivations for soya adoption outweighed the constraints in 77% of the cases studied. In general even women who had not adopted soya were aware of its nutritional benefits, especially for young children. Almost every woman interviewed expressed the belief that soya was "good for the body" and "provided blood" or "strength." Clearly, in this area of Yorubaland, the "message" about soya was being heard, although not always heeded.

The health and economic benefits of soya consumption in this impoverished area of sub-Saharan Africa are self-evident: soya provides a low-cost, high-protein, versatile alternative to more expensive traditional protein sources such as meat, fish and eggs. Children "treated" with soya foods in the clinics in the Ogbomoso Zone showed remarkable improvement within a matter of weeks. Adults incorporating soya into their diets also reaped the benefits of the much-needed additional protein. The problem,

however, with any non-traditional, newly-introduced food is its "acceptability" to the people. Regardless of the health benefits, no matter how numerous, the introduction of a new food as a solution to hunger or malnutrition is often a failure due to the cultural hurdles involved in any new food adoption. Food availability, as discussed in previous chapters, is an issue quite separate from food acceptability.

Soya appears to have overcome many of the copious hurdles--structural, institutional, and cultural--within the Ogbomoso Zone within a relatively short period of time. Most women, for example, reported having heard of soya for the first time only in the previous six years. (See Figure 7.3.) Although future, long-term adoption is still in question, most women indicated that the once the initial constraints to adoption were overcome, such as learning to prepare soya, they would continue to use it as a low-cost alternative to other more expensive foods. Much of this success can be attributed to the intense social marketing of soya first by IITA and then by the numerous health programs within the Ogbomoso Zone. Clinics such as Kersey Children's Home and World Vision have done an excellent job in training staff members on the production, use and preparation of soya and then in adapting its use to "fit" their own patient population. These clinics have found methods for presenting soya in a culturally acceptable way to the women of the Ogbomoso Zone.

Because of the intense social marketing of soya within the Ogbomoso Zone by numerous health clinics and workers, this region does present a unique situation, undoubtedly not duplicated elsewhere within Nigeria. However, it may present a "picture" of the future potential of soya within the country, at least within Yoruba communities.

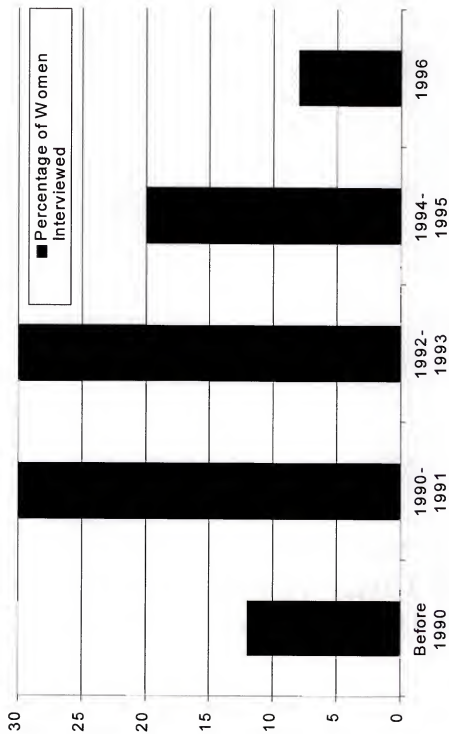


Figure 7-3: Initial Introduction of Women to Soya in the Ogbomoso Zone

Although soya is yet to be "marketed" as heavily in other areas, its success in the Ogbomoso Zone shows promise for soya as a food that might one day become an accepted staple food as cassava, rice, and maize have become throughout the years.

Although it is doubtful that the composite decision tree modeled in this research would discover as many "adopters" in other areas, it seems likely that the model itself would be applicable in other Yoruba regions where the motivations and constraints to soya adoption would be similar.

So is soya a success story in the race against hunger and malnutrition? On a global level, soya does offer many advantages as a high-protein food; however, it is unlikely that all or even most regional food and nutrition problems will be "solved" by soya adoption. Nevertheless, within Nigeria where protein is scarce and the diet is generally heavy in starches and the economy and political situation is volatile, soya does seem to offer *one* alternative for combating hunger and malnutrition. Other larger solutions, such as a stable political environment and a government focused on increasing agricultural production and making possible an equitable distribution of goods and services, are desperately needed. The country as a whole needs an "enabling environment" which makes possible true change and an overall rise in standard of living. However, until these problems are attacked, the people of each region and community must face their immediate nutrition needs with their present resources, no matter how limited. In this light, soya does appear to be one of the best solutions available for the people of the Ogbomoso Zone and perhaps Yorubaland in general.

APPENDIX A
SOYA SURVEY FOR WOMEN IN THE OGBOMOSO ZONE

Interviewer _____
Location of Interview _____

Questionnaire for Soya Project

Male _____ Female _____
Place of residence _____
For how long? _____
Are you married? ____ yes ____ no
If yes, for how long? _____
Other wives? _____
Number of children born _____
Number of children living _____
Last year of school _____
Spouse's last year of school _____
Occupation(s) _____
Spouse's Occupation(s) _____

General Questions:

1. What three foods do you eat the most?
2. What about in the dry season?
3. What three foods do you think are the best for your body?
4. What three foods do you think are the best for your young children?
5. Are there any foods that you would like to eat more of but do not feel that you can afford to buy?
6. Have you ever heard of ile-tutu? ____ yes ____ no
7. What do you think causes ile-tutu?
8. Who in your household makes the decision where to take your children if they are sick?

Soya Use Questions for Women:

1. Have you ever heard of soya? ____ yes ____ no (If no, skip all soya questions)
2. Where did you first hear of soya? (Put a 1 by the first place and checks by all others)
 ____ Market ____ Friends or family ____ Kersey ____ World Vision
 ____ Community Health ____ Hospital ____ AGRIC
 ____ Newspaper ____ Radio or television ____ Better Life for Women
 ____ Church ____ Other
3. Have you ever eaten soya? ____ yes ____ no
4. Have you ever prepared soya? ____ yes ____ no (If no, go to Question #12)
5. Which foods have you prepared with soya? ____ None ____ Cheese
 ____ Milk ____ Soup ____ Other (list)
6. Have you ever bought soya already prepared? ____ yes ____ no
7. If you prepare milk, how often? ____ 3 or more times a week
 ____ 1-2 times a week ____ 3 or less times a month ____ Rarely
8. If you prepare cheese, how often? ____ 3 or more times a week
 ____ 1-2 times a week ____ 3 or less times a month ____ Rarely
9. If you prepare other foods with soya, how often? ____ 3 or more times a week
 ____ 1-2 times a week ____ 3 or less times a month ____ Rarely
10. Do you buy beans or flour? ____ Beans ____ Flour ____ Both
11. When did you first prepare soya? ____ This year ____ Last year
 ____ 2-3 years ago ____ Longer than 3 years ago
12. Have you ever been told that soya is good for the body, gives energy or provides blood? ____ yes ____ no
13. Do you have children or take care of children that are less than 5 years old?
 ____ yes ____ no
14. Have they ever gotten lean or had swelling or ile-tutu or oka? ____ yes ____ no
15. Do you ever worry about them getting any of these things or do anything to prevent them from getting these things? ____ yes ____ no
16. Have any of the adults or older children in your household ever gotten lean or had ile-tutu? ____ yes ____ no
17. Do you think that these problems such as getting lean or ile-tutu can only be cured with ogun funfun (oyinbo medicine)? ____ yes ____ no
18. Do you think that these problems can only be cured by ogun dudu (native medicine)?
 ____ yes ____ no
19. Do you think that these problems only be cured by faith, prayer or spiritual healers?
 ____ yes ____ no
20. Do you think that any of these problems can be caused or helped by food?
 ____ yes ____ no
21. Do you think that there are any illnesses like ile-tutu that could be helped by soya?
 ____ yes ____ no
22. Do you think that soya is a good price compared to other foods? ____ yes ____ no
23. Has a family member, friend or medical person ever told you that you should prepare soya? ____ yes ____ no
24. Do you like tinned or powdered milk? ____ yes ____ no

25. Can you afford tinned or powdered milk? _____yes _____no
26. Are you a community health worker or committee member, nutrition promoter or traditional midwife with World Vision or any other community health organization?
_____yes _____no
27. Do you or someone in your household grow soya?
_____yes _____no _____have in the past
28. Do you sell soya? _____yes _____no _____have in past
29. Do you have a place where you can buy or get soya? _____yes _____no
30. Do you have your own money with which you could buy soya if you wanted to?
_____yes _____no
31. If not, would your husband or some other family member give you money to buy soya if you wanted to? _____yes _____no _____don't know
32. Do you think that soya is too expensive to purchase? _____yes _____no
33. Do you have a place where you can buy soya already prepared so you don't have to prepare soya yourself? _____yes _____no (If yes, go to Question #40)
34. Do you have someplace that you can grind beans? _____yes _____no
35. Can you or will you grind soya yourself? _____yes _____no
36. Has anyone ever taught you to prepare soya? _____yes _____no
37. Do you ever try to prepare foods that you have never prepared before and that no one has taught you to prepare? _____yes _____no
38. Do you think that soya is difficult or time-consuming to prepare (even if you have never prepared it yourself before)? _____yes _____no _____don't know
39. Do you ever prepare foods that take a lot of time and work to prepare?
_____yes _____no
40. Do you ever make the decision what foods to prepare in your house?
_____yes _____no If no, who does decide? _____
41. Will the person/people who decide what to eat in your household eat soya?
_____yes _____no
42. Will you prepare different foods for different people in the house at one meal?
_____yes _____no
43. Do you like foods made with soya?
_____yes _____no
44. Will you fix foods for your family that you don't like?
_____yes _____no
45. Do any of your children like foods made with soya? _____yes _____no
46. Do you ever feed your children foods that they don't like but that you think are good for them? _____yes _____no
47. Does soya upset anyone's stomach in your house? _____yes _____no
48. Have you ever read or heard anything bad about soya or other beans?
_____yes _____no

49. If so, is there something you can do (like grow the beans yourself or prepare them yourself) to avoid the problems? _____yes _____no
50. Do you think that foods made with soya are just epanu or are "not food"?
_____yes _____no
51. Do you and your family ever eat foods that are epanu or not really food?
_____yes _____no
52. Do you dislike the taste, odor or color of soya? If yes, please explain.

Comments: Are there any other reasons you can think of why you do or do not use soya?

APPENDIX B

EXAMPLES OF SOYA RECIPES

Recipe for soya milk made from beans:

Ingredients:

1 cup soyabeans

6 cups water

Sugar and salt to taste

Method:

1. Clean beans by removing stones and dirt. Reject broken beans
2. Drop 1 cup of soyabeans in 6 cups boiling water and continue to boil for 20 minutes. Do not cover.
3. Drain.
4. Grind beans to a smooth paste.
5. Add 6 cups of boiled water.
6. Strain mixture through a clean muslin cloth or clean white cloth. Squeeze muslin to extract milk.
7. Add sugar and salt to taste. Cook milk just below boiling level for 5 minutes. Do not cover.
8. Cool milk in open container.

Notes:

Milk can be kept for 12 hours without a refrigerator. Residue can be kept in a cool place for 24 hours. If dried it can be kept longer. The residue can be used in soup and other foods.

(Source: IITA, 1990).

Recipe for soya milk made from flour:

Ingredients:

1 cup cooked soya flour

3 cups water

Sugar and salt to taste

Method:

1. Mix the soya flour with boiled water.
2. Boil mixture for 10 minutes.
3. Strain liquid through a clean muslin cloth or clean white cloth.
4. Add sugar or salt to taste.

(Source: Soya classes at Kersey Children's Home)

Recipe for soya cheese:

Ingredients:

Soyabeans

Lemon

Cheese basket

Method:

1. Remove dirt and stones from beans and soak overnight for about 8 hours (overnight).
2. Drain the soaked beans and rinse without removing the skin.
3. Grind into paste, mix the paste with a minimum amount of slurry and cook to boil and allow to boil for 20 minutes. (If foaming add palm oil).
4. Remove from fire, still dilute with minimum amount of water to allow easy and complete removal of the milk from the residue.
5. Strain liquid through a clean muslin cloth or clean white cloth. Mix the milk with lemon (coagulating agent) and steam cook. Allow the milk to coagulate before removing it from the fire.
6. Pour the coagulated mixture into a filter box (a wooden box designed for the purpose) lined with filter cloth.
7. Cover the mixture with the filter cloth and press to drain. Remove from box and drop the cheese into cold water for further hardening and preservation. Sugar or salt may be added according to taste.

(Source: Agugo, 1995)

REFERENCES

- Adams, Norman. 1988. A new plan for Africa. *New Scientist* 118: 89.
- Adeniyi, J.P. 1984. Poor quality of rural life in Nigeria: Implications for policy. *Rural Development in Nigeria* 1(2): 73-78.
- Adetunji, Jacob A. 1992. Church-based obstetric care in a Yoruba community, Nigeria. *Social Science and Medicine* 35(9): 1171-1178.
- Adeyeye, V.A. 1984. Women, domestic economy and rural time budgets: A case study of Oyo State, Nigeria. *Rural Development in Nigeria* 1(1): 65-71.
- Adeyeye, V.A. 1989. *Health and Nutrition Factors in Labour Productivity Amongst Tobacco and Non-Tobacco Farmers in Oyo State of Nigeria*. Ibadan, Nigeria: Nigerian Institute of Social and Economic Research.
- Agugo, Kelechi J. 1995. *Soya: Your Sure Way to Good Health*. Ughelli, Nigeria: Ohoror Brothers Press.
- Aina, T.A., F.E. Etta, and M.F. Zeitlin. 1992. *Child Nutrition and Development in Nigeria: A Textbook for Education, Health and Social Services Professionals*. Lagos, Nigeria: Federal Government of Nigeria and UNICEF.
- Alubo, S. Ogoh. 1985. Underdevelopment and the health care crisis in Nigeria. *Medical Anthropology* 9(4): 319-335.
- Anazonwu-Bello, J.N. 1980. *Soya Bean in the National Diet*. Enugu, Nigeria: Government Printer.
- Anderson, M. and M.W. Rosenberg. 1990. Ontario's Underserved Area Program revisited: An indirect analysis. *Social Science and Medicine* 30(1): 35-44.
- Anikpo, L.E. 1993. *Medical Practice in Nigeria: A Personal Experience*. Port Harcourt, Nigeria: Pam Unique Publishers.
- Atinmo, Tola. 1983. "Food problems and nutrition situation in Nigeria." In *Nutrition and Food Policy in Nigeria*, ed. by Tola Atinmo and L. Akinyele, pp. 78-93. Ibadan, Nigeria: Ibadan University Press.

- Aunger, Robert. 1994. Are food avoidances maladaptive in the Ituri forest of Zaire? *Journal of Anthropological Research* 50: 277-311.
- Ayittey, George B.N. 1995. "Why structural adjustment failed in Africa." In *Structural Adjustment: Retrospect and Prospect*, ed. by Daniel M. Schydlowsky, pp. 108-124. Westport, Connecticut: Praeger.
- Azam, Jean-Paul. 1995. "Development policy for Africa: A research agenda." In *Whither African Economies?*, ed. by Jean-Claude Berthelemy, pp. 69-89. Paris: Organization for Economic Cooperation and Development.
- Bailey, W. and D.R. Phillips. 1990. Spatial patterns of use of health services in the Kingston Metropolitan Area, Jamaica. *Social Science and Medicine* 30(1): 1-12.
- Bamgboye, E. Afolabi and O.A. Lapido. 1992. Oral contraceptive marketing in Ibadan, Nigeria. *Social Science and Medicine* 35(7): 903-906.
- Bankole, Akinrinola. 1995. Desired fertility and fertility behaviour among the Yoruba of Nigeria: A study of couple preferences and subsequent fertility. *Population Studies* 49: 317-328.
- Barber, Karin. 1997. "How man makes God in West Africa: Yoruba attitudes towards the orisa." In *Perspectives on Africa*, ed. by Roy Richard Grinker and Christopher B. Steiner, pp. 392-411. Cambridge, Massachusetts: Blackwell.
- Barrett, Frank A. 1993. A medical geographical anniversary. *Social Science and Medicine* 37(6): 701-710.
- Bascom, William. 1969. *The Yoruba of Southwestern Nigeria*. New York: Holt, Rinehart and Winston.
- Bates, Robert H. 1981. *Market and States in Tropical Africa: The Political Basis of Agricultural Policies*. Berkeley, California: University of California Press.
- Bauer, Peter. 1981. *Equality, the Third World, and Economic Delusion*. Cambridge, Massachusetts: Harvard University Press.
- Beardsworth, Alan and Teresa Keil. 1997. *Sociology on the Menu: An Invitation to the Study of Food and Society*. New York: Routledge.
- Berg, Alan. 1973. *The Nutrition Factor: Its Role in National Development*. Washington, D.C.: Brookings Institute.

- Berg, Elliot. 1995. "African adjustment programs: False attacks and true dilemmas." In *Structural Adjustment: Retrospect and Prospect*, ed. by Daniel M. Schydlowsky, pp. 89-107. Westport, Connecticut: Praeger.
- Bernard, H.R. 1988. *Research Methods in Cultural Anthropology*. Beverly Hills, California: Sage.
- Berthelemy, Jean-Claude and Jacques Lecaillon. 1995. "Synthesis." In *Whither African Economies?* ed. by Jean-Claude Berthelemy, pp. 149-160. Paris: Organization for Economic Cooperation and Development.
- Bilsborrow, Richard E. 1987. Population pressures and agricultural development in developing countries: A conceptual framework and recent evidence. *World Development* 15(2): 183-203.
- Binswanger, Hans P. 1986. Evaluating research system performance and targeting research in land-abundant areas of sub-Saharan Africa. *World Development* 14(4): 469-475.
- Binswanger, Hans P. and J. McIntire. 1987. Behavioral and material determinants of production relations in land abundant tropical agriculture. *Economic Development and Cultural Change* 36(1): 73-99.
- Biswas, Margaret and Per Pinstrup-Anderson. 1985. *Nutrition and Development*. Oxford: Oxford University Press.
- Black's Medical Dictionary*. 1992. London: A&C Black Publishers.
- Borlaug, Norman and Christopher R. Dowsell. 1994. Feeding a human population that increasingly crowds a fragile planet. Keynote lecture, 15th World Congress of Soil Science, July 16, 1994. Acapulco, Mexico.
- Boserup, Ester. 1965. *The Conditions of Agricultural Growth*. Chicago: Aldine.
- Boserup, Ester. 1997. "The economics of polygamy." In *Perspectives on Africa*, ed. by Roy Richard Grinker and Christopher B. Steiner, pp. 506-517. Cambridge, Massachusetts: Blackwell.
- Bowen, Deborah J. and Lesley F. Tinker. 1995. "Controversies in changing dietary behavior." In *Nutrition and Health: Topics and Controversies*, ed. by Felix Bowen, pp.45-66. Boca Raton, Florida: CRC Press.
- Bradley, P.N. and Carter, S.E. 1989. Food production and distribution- and hunger. In *A World in Crisis?*, ed. by Johnston, R.J., and Peter J. Taylor, pp. 101-124. Cambridge: Basil Blackwell.

- Brautigam, Deborah A. 1994. What can Africa learn from Taiwan? Political economy industrial policy, and adjustment? *The Journal of Modern Africa Studies* 32(1): 111-138.
- Brookfield, H.C. 1984. Intensification revisited. *Pacific Viewpoint* 25: 15-44.
- Brookfield, H.C. and Doreen Hart. 1971. *Melanesia: A Geographical Interpretation of an Island World*. London: Methuen.
- Brown, L.D. 1991. Bridging organizations and sustainable development. *Human Relations* 44(8): 807-831.
- Brown, Lawrence A. 1981. *Innovation Diffusion: A New Perspective*. New York: Methuen.
- Brown, Lester R. 1990. *State of the World*. New York: W.W. Norton.
- Brown, Lester R. 1994. "Facing food insecurity." In *State of the World*, ed. by L. Starke, pp. 177-197. New York: W.W. Norton.
- Caldwell, B.E. 1973. *Soybeans: Improvement, Production, and Uses*. Madison, Wisconsin: American Society of Agronomy.
- Caldwell, John C. 1979. Education as a factor in mortality decline: An examination of Nigerian data. *Population Studies* 33: 395-398.
- Caldwell, John C. 1993. Health transition: The cultural, social and behavioural determinants of health in the Third World. *Social Science and Medicine* 36(2): 125-135.
- Caliendo, Mary A. 1979. *Nutrition and the World Food Crisis*. New York: Macmillan.
- Camdessus, Michel. 1991. Good news out of Africa. *Finance and Development* 28(4): 2.
- Cassel, John. 1977. "Social and cultural implications of food and food habits." In *Culture, Disease, and Healing*, ed. by David Landy, pp. 236-242. New York: Macmillan.
- Chambers, R. 1989. The state and rural development: Ideologies and an agenda for the 1990s. *IDS Discussion Paper* 269. Sussex, England: University of Sussex.
- Chayanov, A.V. 1966. *The Theory of Peasant Economy*. Homewood, Illinois: R.D. Irwin.

- Cherfas, Jeremy. 1990. FAO proposes a "new" plan for feeding Africa: It will provide massive supplies of fertilizer. *Science* 250: 748-749.
- Christensen, Cheryl and Lawrence Witucki. 1986. "Food policies in sub-Saharan Africa." In *Africa's Agrarian Crisis: The Roots of Famine*, ed. by Stephen K. Commins, Michael F. Lochie, and Rhys Payne, pp. 19-36. Boulder, Colorado: Lynne Rienner.
- Clark, G. 1984. *Innovation Diffusion: Contemporary Geographical Approaches*. Norwich, England: Regency House.
- Clark, Gracia and Takiyawa Manuh. 1991. "Women traders in Ghana and the structural adjustment program." In *Structural Adjustment and African Women Farmers*, ed. by Christina H. Gladwin, pp. 217-238. Gainesville, Florida: University of Florida Press.
- Coffey, Amanda and Paul Atkinson. 1996. *Making Sense of Qualitative Data: Complementary Research Strategies*. Thousand Oaks, California: Sage.
- Cohen, Ronald. 1989. "The unimodal model: Solution or cul de sac for rural development?" In *Food and Farm*, ed. by Christina Gladwin and Kathleen Truman, pp. 7-33. Lanham, Maryland: University Press of America.
- Cohen, Ronald and Abe Goldman. 1992. "The society and its environment." In *Nigeria: A Country Study*, ed. by Helen Chapin Metz, pp. 85-154. Washington, D.C.: Federal Research Division, Library of Congress.
- Collins, Travis. 1993. *The Baptist Mission of Nigeria: 1850-1993*. Ibadan, Nigeria: Associated Book-Makers Nigeria Limited.
- Conelly, Thomas. 1994. Population pressure, land availability, and agricultural disintensification: The decline of farming on Rusinga Island, Kenya. *Human Ecology* 22(2): 145-170.
- Cornia, G.A., R. Jolly, and F. Stewart. 1987. *Adjustment with a Human Face: Protecting the vulnerable and promoting growth*. Oxford: Oxford University Press.
- Cravioto, J. and E.R. DeLicardie. 1980. "Malnutrition in early childhood: An ecological view." In *Issues in Nutrition for the 1980s*, ed. by Alice L. Tobias and Patricia J. Thompson, pp. 95-105. Monterey, California: Wadsworth.
- Crocker, David A. 1991. Toward development ethics. *World Development* 19(5): 457-483.
- Cross, Michael. 1984. The failure of Africa's agriculture. *New Scientist* 103: 5.

- Curtis, Sarah and Ann Taket. 1996. *Health and Societies: Changing Perspectives*. London: Arnold.
- Curto de Casas, Susana I. 1994. "Health care in Latin America." In *Health and Development*, ed. by David R. Phillips and Yola Verhasselt, pp. 234-248. New York: Routledge.
- Dando, William A. and Caroline Z. Dando. 1994. Hunger, malnutrition, and famine: Unnecessary facets of an affluent world. *World Hunger and Famine: Professional Paper No. 20*. Terre Haute: Indiana State University.
- Davis, Kingsley. 1963. The theory of change and response in modern demographic history. *Population Index* 29(4): 345-366.
- de Boeck, Filip. 1994. When hunger goes around the land: Hunger and food among the Aluund of Zaire. *Man* 29: 257-282.
- Dei, George J.S. 1992. "A Ghanaian rural community: Indigenous responses to seasonal food supply cycles and the soci-environmental stresses of the 1980s." In *Development From Within: Survival in Africa*, ed. by D.R.F. Taylor and Fiona Mackenzie, pp.58-81. London: Routledge.
- Delgado, Christopher L. 1995. Agricultural diversification and export promotion in sub-Saharan Africa. *Food Policy* 20(3): 225-243.
- Del Rosso, Joy Miller. 1992. *Investing in Nutrition with World Bank Assistance*. Washington, D.C.: The World Bank.
- Dettwyler, Katherine A. 1992. The biocultural approach in nutritional anthropology: Case studies of malnutrition in Mali. *Medical Anthropology* 15: 17-39.
- Due, Jean M. 1991. "Policies to overcome the negative effects of structural adjustment programs on African female-headed households." In *Structural Adjustment and African Women Farmers*, ed. by Christina H. Gladwin, pp. 103-127. Gainesville, Florida: University of Florida Press.
- Duncan, Alex and John Howell. 1992. "Assessing the impact of structural adjustment." In *Structural Adjustment and the African Farmer*, ed. by Alex Duncan and John Howell, pp. 1-13. London: Overseas Development Institute.
- Eicher, Carl K. 1995. Zimbabwe's maize-based Green Revolution: Preconditions for replication. *World Development* 23(5): 805-818.

- Elabor-Idemudia, Patience. 1991. "The impact of structural adjustment programs on women and their households in Bendel and Ogun States, Nigeria." In *Structural Adjustment and African Women Farmers*, ed. by Christina H. Gladwin, pp. 128-150. Gainesville, Florida: University of Florida Press.
- Fabayo, J.A. 1996. Technological dependence in Africa: Its nature, causes, consequences and policy derivatives. *Technovation* 16(7): 357-370.
- Fallon, April E. and Paul Rozin. 1983. The psychological bases of food rejections by humans. *Ecology of Food and Nutrition* 13: 15-26.
- Feder, G. and D.L. Umali. 1993. The adoption of agricultural innovations: A review. *Technological Forecasting and Social Change* 45: 215-239.
- Federation of Nigeria. 1962. *National Development Plan 1962-1968*. Lagos, Nigeria: The Nigerian Government.
- Fieldhouse, Paul. 1995. *Food and Nutrition: Customs and cultures*. London: Chapman & Hall.
- Fine, Jeffrey C. 1995. "Sub-Saharan Africa: Its prospects for growth." In *Whither African Economies?*, ed. by Jean-Claude Berthelemy, pp. 57-68. Paris: Organization for Economic Cooperation and Development.
- Flegg, A.T. 1982. Inequality of income, illiteracy, and medical care as determinants of infant mortality in underdeveloped countries. *Population Studies* 36: 441-454.
- Food and Agriculture Organization. 1985. *Women and Developing Agriculture*. In Women and Agriculture Series, No. 4. Rome: FAO.
- Food and Agriculture Organization. 1994. *Tropical Soybean: Improvement and Production*. Rome: FAO.
- Forde, Daryll. 1951. *The Yoruba-Speaking Peoples of South-Western Nigeria*. London: International African Institute.
- Foster, P. 1992. *The World Food Problem: Tackling the Causes of Undernutrition in the Third World*. Boulder, Colorado: Lynne Rienner.
- Foster-Carter, Aidan. 1976. From Rostow to Gunder Frank: Conflicting paradigms in the analysis of underdevelopment. *World Development* 4(3): 167-180.

- Fosu, Gabriel B. and Janardan Subedi. 1996. "The demographic, cultural, and behavioral contexts of maternal and child health in developing countries." In *Society, Health, and Disease: Transcultural Perspectives*, ed. by Janardan Subedi and Eugene B. Gallagher, pp. 92-106. Upper Saddle River, New Jersey: Prentice Hall.
- Gakou, Mohamed L. 1987. *The Crisis in African Agriculture*. London: Zed Books.
- Gesler, Wilbert M. 1992. Therapeutic landscapes: Medical issues in light of the new cultural geography. *Social Science and Medicine* 34(7): 735-746.
- Giampietro, M. and D. Pimentel. 1992. Energy efficiency and nutrition in societies based on human labor. *Ecology of Food and Nutrition* 28: 11-32.
- Gladwin, Christina H. 1989. *Ethnographic Decision Tree Modeling*. Newbury Park, California: Sage.
- Gladwin, Christina H. 1991a. "Introduction." In *Structural Adjustment and African Women Farmers*, ed. by Christina H. Gladwin, pp. 1-22. Gainesville, Florida: University of Florida Press.
- Gladwin, Christina H. 1991b. "Fertilizer subsidy removal programs and their potential impacts on women farmers in Malawi and Cameroon." In *Structural Adjustment and African Women Farmers*, ed. by Christina H. Gladwin, pp. 191-216. Gainesville, Florida: University of Florida Press.
- Gladwin, Christina H. 1992. Gendered impacts of fertilizer subsidy removal programs in Malawi and Cameroon. *Agricultural Economics* 7: 141-153.
- Gladwin, Christina H. 1996. *Doing Ethnography with Decision Trees*. Unpublished manuscript.
- Glaser, Barney and Anselm Strauss. 1967. *The Discovery of Grounded Theory*. Chicago: Aldine.
- Goldman, Abe. 1993. Agricultural innovation in three areas of Kenya: Neo-Boserupian theories and regional characterization. *Economic Geography* 69(1): 44-71.
- Good, Charles M. 1991. Pioneer medical missions in colonial Africa. *Social Science and Medicine* 32(1): 1-10.
- Goulet, Denis. 1989. Participation in development: New avenues. *World Development* 17(2): 165-178.

- Goulet, Denis. 1992. Development: Creator and destroyer of values. *World Development* 20(3): 467-475.
- Green, Reginald H. 1991. Politics, power, and poverty: Health for all in 2000 in the Third World? *Social Science and Medicine* 32(7): 745-755.
- Grigg, David. 1976. Population pressure and agricultural change. *Progress in Geography* 8(2): 135-176.
- Grigg, David. 1993. International variations in food consumption in the 1980s. *Geography* 78(3): 251-266.
- Grigg, David. 1995. The geography of food consumption: A review. *Progress in Human Geography* 19(3): 338-354.
- Grigg, David. 1997. The world's hunger: A review 1930-1990. *Geography* 82(3): 197-206.
- Guyer, Jane I. 1992. Representation without taxation: An essay on democracy in rural Nigeria, 1952-1990. *African Studies Review* 35(1): 41-79.
- Guyer, Jane I. And Olukemi Idowu. 1991. "Women's agricultural work in a multimodal rural economy: Ibarapa District, Oyo State, Nigeria." In *Structural Adjustment and African Women Farmers*, ed. by Christina H. Gladwin, pp. 257-280. Gainesville, Florida: University of Florida Press.
- Guyer, Jane I. and Eric F. Lambin. 1993. Land use in an urban hinterland: Ethnography and remote sensing in the study of African intensification. *American Anthropologist* 95(4): 839-859.
- Gwanfobge, P.N., E. Chambers IV, G. Martin, M. Fotso, and M.F. Smith. 1991. Comparison of the acceptability of traditional Cameroon sauces made with additional oil seeds to improve nutritional value. *Ecology of Food and Nutrition* 25: 323-332.
- Hagerstrand, Torsten. 1967. *Innovation Diffusion as a Spatial Process*. Chicago: University of Chicago Press.
- Harris, Jonathan. 1995. *World Agriculture: Regional Sustainability and Ecological Limits*. Medford, Massachusetts: School of Nutrition, Tufts University.
- Hayami, Yujiro and Vernon W. Ruttan. 1985. *Agricultural Development: An International Perspective*. Baltimore: Johns Hopkins University Press.
- Helleiner, G.K. 1992. The IMF, the World Bank, and Africa's adjustment and external debt problems: An unofficial view. *World Development* 20(6): 779-792.

- Helleiner, G.K., G.A. Cornia, and R. Jolly. 1991. IMF adjustment policies and approaches and the needs of children. *World Development* 19(12): 1823-1834.
- Herbst, Jeffrey. 1990. The structural adjustment of politics in Africa. *World Development* 18(7): 949-958.
- Hertz, Erica, James R. Hebert, and Joan Landon. 1994. Social and environmental factors and life expectancy, infant mortality, and maternal mortality rates: Results of a cross-national comparison. *Social Science and Medicine* 39(1): 105-114.
- Hopkins, Antony G. 1986. The World Bank in Africa: Historical reflections on the African present. *World Development* 14(12): 1473-1487.
- Hopkins, Michael. 1991. Human development revisited: A new UNDP report. *World Development* 19(10): 1469-1473.
- Horst, Shannon, Colleen Lowe Morna, and Davidson O. Jonah. 1990. Educating our children to be farmers. *African Farmer* 4: 17-21.
- Huffman, Sandra L. and Luann H. Martin. 1994. First feedings: Optimal feeding of infants and toddlers. *Nutrition Research* 14: 127-159.
- Hughes, Charles C. and John M. Hunter. 1970. Disease and "development" in Africa. *Social Science and Medicine* 3: 443-493.
- Husain, Ishrat. 1994. Results of adjustment in Africa: Selected cases. *Finance and Development* 31(2): 6-9.
- Huss-Ashmore, Rebecca and John J. Curry. 1991. Diet, nutrition, and agricultural development in Swaziland. *Ecology of Food and Nutrition* 26: 167-185.
- Hyden, Goran. 1980. *Beyond Ujamaa in Tanzania*. Berkeley, California: University of California Press.
- Hyden, Goran. 1986. "The invisible economy of smallholder agriculture in Africa." In *Understanding Africa's Rural Household and Farming Systems*, ed. by Joyce Lewinger Mooock, pp. 11-35. Boulder, Colorado: Westview Press.
- Igbedioh, S.O. and J.B.I. Aderiye. 1992. Breastfeeding pattern and weaning practices in infants and children in Makurdi, Nigeria under changing socio-economic condition. *Ecology of Food and Nutrition* 29: 45-59.
- Ihonvbere, Julius O. 1996. Are things falling apart? The military and the crisis of democratisation in Nigeria. *The Journal of Modern African Studies* 34(2): 193-225.

- IITA. 1990. *Soybeans for Good Health: How to Grow and Use Soybeans in Nigeria*. Ibadan, Nigeria: International Institute of Tropical Agriculture.
- IITA. 1992a. *Sustainable Food Production in Sub-Saharan Africa: 1 IITA's Contributions*. Ibadan, Nigeria: International Institute of Tropical Agriculture.
- IITA. 1992b. *Sustainable Food Production in Sub-Saharan Africa: 2 Constraints and Opportunities*. Ibadan, Nigeria: International Institute of Tropical Agriculture.
- Ikpe, E.B. 1994. *Food and Society in Nigeria*. Stuttgart: Franz Steiner Verlag.
- Ingham, Barbara. 1993. The meaning of development: Interactions between "new" and "old" ideas. *World Development* 21(11): 1803-1821.
- INTSOY. 1986. *The Soybean Solution: Meeting World Food Needs*. Urbana, Illinois: International Soybean Program.
- Ityavyar, Dennis A. 1984. A traditional midwife practice, Sokoto State, Nigeria. *Social Science and Medicine* 18(6): 497-501.
- Ityavyar, Dennis A. 1987. Background to the development of health services in Nigeria. *Social Science and Medicine* 24(6): 487-499.
- Iyegha, D.A. 1988. *Agricultural Crisis in Africa: The Nigerian Experience*. Lanham, Maryland: University Press of America.
- Iyun, Bose. 1994. "Health care in the third world: Africa." In *Health and Development* ed. by David R. Phillips and Yola Verhasselt, pp. 249-258. New York: Routledge.
- Jelliffe, Derrick B. and E.F. Patrice Jelliffe. 1989. *Community Nutritional Assessment*. Oxford: Oxford University Press.
- Johnston, Bruce F. 1982. "Integrated multisectoral nutrition interventions at the village level." In *Nutrition Policy Implementation: Issues and Experience*, ed. by Nevin S. Scrimshaw and Mitchel B. Wallerstein, pp. 173-208. New York: Plenum Press.
- Johnston, Bruce F. 1986. "Governmental strategies for agricultural development." In *Strategies for African Development*, ed. by Robert J. Berg and Jennifer Seymour Whitaker, pp. 155-183. Berkeley: University of California Press.
- Jones, Christine and Miguel Kiguel. 1994. Africa's quest for prosperity: Has adjustment helped? *Finance and Development* 31(2): 2-5.
- Jones, Kelvyn and Graham Moon. 1993. Medical geography: taking space seriously. *Progress in Human Geography* 17(4): 515-524.

- Kanarek, Robin B. and Robin Marks-Kaufman. 1991. *Nutrition and Behavior: New Perspectives*. New York: Van Nostrand Reinhold.
- Kasfir, Nelson. 1993. "Agricultural transformation in the Robusta coffee/banana zone of Bushenyi, Uganda." In *Population Growth and Agricultural Change in Africa*, ed. by B.L. Turner II, Goran Hyden, and Robert W. Kates, pp. 41-79. Gainesville, Florida: University Press of Florida.
- Kates, Robert W., Goran Hyden and B.L. Turner, II. 1993. *Population Growth and Agricultural Change in Africa*. Gainesville, Florida: University of Florida Press.
- Kearns, Robin A. 1991. The place of health in the health of place: The case of the Hokianga special medical area. *Social Science and Medicine* 33(4): 519-530.
- Kearns, Robin A. 1993. Place and health: Towards a reformed medical geography. *Annals of the Association of American Geographers* 45(2): 139-147.
- Kearns, Robin A. and Alun E. Joseph. 1993. Space in its place: Developing the link in medical geography. *Social Science and Medicine* 37(6): 711-717.
- Killick, Tony. 1995a. "Relevance, meaning and determinants of flexibility." In *The Flexible Economy*, ed. by Tony Killick, pp. 1-33. London: Routledge.
- Killick, Tony. 1995b. "Economic inflexibility in Africa: Evidences and causes." In *The Flexible Economy*, ed. by Tony Killick, pp. 154-196. London: Routledge.
- Kirk-Greene, Anthony and Douglas Rimmer. 1981. *Nigeria Since 1970: A Political and Economic Outline*. New York: Africana Publishing Company.
- Kirkpatrick, Colin and John Weiss. 1995. Trade policy reforms and performance in Africa in the 1980s. *The Journal of Modern African Studies* 33(2): 285-298.
- Kleiner, Kurt. 1994. But is it enough to stave off world hunger? *New Scientist* 143: 7-8.
- Kleinman, Sherryl and Martha A. Copp. 1993. *Emotions and Fieldwork*. Newbury Park, California: Sage.
- Kloos, Helmut. 1994. "The poorer third world: Health and health care in areas that have not yet to experience substantial development." In *Health and Development*, ed. by David R. Phillips and Yola Verhasselt, pp. 199-215. New York: Routledge.

- Koehn, Peter and Olatunde Ojo. 1997. "Nongovernmental organizations and government-organized nongovernmental organizations: Opportunities for development management in Africa in the twenty-first century." In *Subsaharan Africa in the 1990s: Challenges to Democracy and Development*, ed. by Rukhsana A. Siddiqui, pp. 109-128. Westport, Connecticut: Praeger Publishers.
- Krugmann, Hartmut. 1995. "Overcoming Africa's crisis: Adjusting structural adjustment toward sustainable development in Africa." In *Beyond Economic Liberalization in Africa*, ed. by Kidane Mengisteab and B. Ikubolajeh Logan, pp. 129-162. London: Zed Books.
- LaFond, Anne. 1995. *Sustaining Primary Health Care*. New York: St. Martin's Press.
- Laogun, E.A. 1991. Rural women training needs: Preferences for methods, place, duration, and time. *Rural Development in Nigeria* 4(1): 42-49.
- Larme, Anne C. 1996. "Culture, parental attitudes, and child health in rural Peru." In *Society, Health, and Disease: Transcultural Perspectives*, ed. by Janardan Subedi and Eugene B. Gallagher, pp. 1-24. Upper Saddle River, New Jersey: Prentice Hall.
- Larson, D.W. and N. Rask. 1992. Industry note: Changing competitiveness in world soybean markets. *Agribusiness* 8(1): 79-91.
- Lawson, Trevor. 1995. Influences in geography: The voice of reason. *Geographical Magazine* 67(5): 54-56.
- Layder, Derek. 1993. *New Strategies in Social Research*. Cambridge: Polity Press.
- Lele, Uma. 1991. "Women, structural adjustment, and transformation: Some lessons and questions from the African experience." In *Structural Adjustment and African Women Farmers*, ed. by Christina H. Gladwin, pp. 46-80. Gainesville, Florida: University of Florida Press.
- Lele, Uma and Steven Stone. 1989. *Population Pressure, the Environment and Agricultural Intensification: Variations on the Boserup Hypothesis*. Washington, D.C.: The World Bank.
- Lentz, Carola. 1991. Changing food habits: An introduction. *Food and Foodways* 5(1): 1-13.
- Lewis, Peter. 1996. From prebendalism to predation: the political economy of decline in Nigeria. *The Journal of Modern African Studies* 34(1): 79-103.

- Little, Marilyn. 1991. Imperialism, colonialism and the new science of nutrition: The Tanganyika experience, 1925-1945. *Social Science and Medicine* 32(1): 11-14.
- Logan, Bernard. 1987. Towards a redefinition of African development: A paradigmatic re-appraisal. *Journal of Developing Societies* 3: 138-155.
- Lovejoy, Paul E. 1992. "Historical setting." In *Nigeria: A Country Study*, ed. by Helen Chapin Metz, pp. 1-84. Washington, D.C.: Federal Research Division, Library of Congress.
- Macgregor, Jenny. 1990. The crisis in African agriculture. *African Insight* 20: 5-16.
- MacKenzie, Debora. 1985. Who will buy Africa's bumper harvest? *New Scientist* 108: 15.
- MacKenzie, Debora. 1994. Will tomorrow's children starve? *New Scientist* 143: 24-29.
- Mackenzie, Fiona. 1992. "Development from within? The struggle to survive." In *Development from Within: Survival in Africa*, ed. by D.R.F. Taylor and Fiona Mackenzie, pp. 1-32. London: Routledge.
- Maclean, Sandra. 1997. "Managing development in Sub-Saharan Africa in the 1990s: States, markets, and civil societies in alternative paradigms." In *Sub-Saharan Africa in the 1990s: Challenges to Democracy and Development*, ed. by Rukhsana A. Siddiqui, pp. 129-144. Westport, Connecticut: Praeger.
- Martin, Susan. 1993. From agricultural growth to stagnation: The case of the Ngwa, Nigeria, 1900-1980. In *Population Growth and Agricultural Change in Africa*, ed. by Turner, B.L., Goran Hyden, and Robert Kates pp. 302-323. Gainesville, Florida: University Press of Florida.
- Mayer, Jean. 1980. "The dimensions of human hunger." In *Issues in Nutrition for the 1980s*, ed. by Alice L. Tobias and Patricia J. Thompson, pp. 73-83. Monterey, California: Wadsworth.
- McIntosh, Wm. Alex. 1995. "World hunger as a social problem." In *Eating Agendas: Food and Nutrition as Social Problems*, ed. by Donna Maurer and Jeffrey Sobal, pp. 35-66. New York: Aldine de Gruyter.
- Mead, Margaret. 1964. *Continuities in Cultural Evolution*. New Haven: Yale University Press.
- Mead, Margaret. 1980. "A perspective on food patterns." In *Issues in Nutrition for the 1980s*, ed. by Alice L. Tobias and Patricia J. Thompson, pp. 225-228. Monterey, California: Wadsworth Health Sciences Division.

- Metz, Helen Chapin. 1992. "Introduction." In *Nigeria: A Country Study*, ed. by Helen Chapin Metz, pp. xxiii-xxxiii. Washington, D.C.: Federal Research Division, Library of Congress.
- Milio, Nancy. 1989. Nutrition and health: Patterns and policy perspectives in food-rich countries. *Social Science and Medicine* 29(3): 413-423.
- Monbiot, George. 1994. The tragedy of enclosure. *Scientific American* 39: 159.
- Morgan, W.T.W. 1992. "Tropical African colonial experience." In *Tropical African Development: Geographical Perspectives*, ed. by M.B. Gleave, pp. 25-49. Harlow: Longman.
- Morgan, William B. and Jerzy A. Solarz. 1994. Agricultural crisis in sub-Saharan Africa: Development constraints and policy problems. *The Geographical Journal* 160(1): 57-73.
- Morley, C.D. 1958. Report on the nutritional conference, Ibadan, West Africa. *African Medical Journal* 7(1): 34.
- Morna, Colleen Lowe. 1990. Helping farmers resist the pull of the city. *African Farmer* 4: 5-15.
- Morris, Cynthia Taft and Irma Adelman. 1989. Nineteenth-century development experience and lessons for today. *World Development* 17(9): 1417-1432.
- Moseley, W. Henry and Lincoln Chen. 1984. "An analytical framework for the study of child survival in developing countries." In *Child Survival: Strategies for Research*, ed. by W. Henry Moseley and Lincoln Chen, pp. 25-45. Cambridge, England: Cambridge University Press.
- Moss, R.P. 1992. "Environmental constraints on development in tropical Africa." In *Tropical African Development: Geographical Perspectives*, ed. by M.B. Gleave, pp. 50-92. Harlow: Longman.
- Nachmias, D. and C. Nachmias. 1987. *Research Methods in the Social Sciences*. New York: St. Martin's Press.
- Nehru, V. and A. Dareshwar. 1994. "New estimates of total factor productivity growth for developing and industrial countries." In *Policy Research Working Paper 1313*. Washington, D.C.: The World Bank.

- Nestel, P.S., C.G.N. Mascie-Taylor, K.A. Mohamed, and A. El Amin. 1992. Nutritional status of under five year olds in North Sudan: 1. Differences due to geographical location, age, twin status and feeding practices. *Ecology of Food and Nutrition* 28: 87-103.
- Netting, Robert M. 1965. Household organization and intensive agriculture: the Kofyar case. *Africa* 35: 422-428.
- Netting, Robert M. 1993. *Smallholders, householders: Farm families and the ecology of intensive, sustainable agriculture*. Stanford, California: Stanford University Press.
- Netting, Robert M., M. Priscilla Stone and Glenn D. Stone. 1989. Kofyar cash-cropping. Choice and change in indigenous agricultural development. *Human Ecology* 17(3): 299-319.
- Netting, Robert M., Glenn D. Stone M. Priscilla Stone. 1993. "Agricultural expansion, intensification, and market participation among the Koyfar, Jos Plateau, Nigeria." In *Population Growth and Agricultural Change in Africa*, ed. by B.L. Turner II, Goran Hyden, and Robert W. Kates, pp. 206-249. Gainesville, Florida: University Press of Florida.
- Neuman, W. Lawrence. 1997. *Social Research Methods: Qualitative and Quantitative Approaches*. Boston: Allyn and Bacon.
- Newman, J.L. 1995. From definition, to geography, to action, to reaction: The case of protein-energy malnutrition. *Annals of the Association of American Geographers* 85(2): 87-103.
- Nigeria Handbook. 1953. London: Crown Agents for Oversea Governments and Administrations.
- Nigerian Demographic and Health Survey. 1991. Lagos, Nigeria: UNICEF and Nigerian Federal Office of Statistics.
- Norman, A.G. 1978. *Soybean Physiology, Agronomy, and Utilization*. New York: Academic Press.
- Nnoli, Okwudiba. 1995. *Ethnicity and Development in Nigeria*. Aldershot, England: Avebury Ashgate.
- North, Douglass C. 1989. Institutions and economic growth: An historical introduction. *World Development* 17(9): 1319-1332.
- Nwulia, M.D.E. 1986. *Studies in Food Production*. Kuru, Nigeria: National Institute for Policy and Strategic Studies.

- O'Brien, Stephen. 1991. "Structural adjustment and transformation in sub-Saharan Africa." In *Structural Adjustment and African Women Farmers*, ed. by Christina Gladwin, pp. 25-45. Gainesville, Florida: University of Florida Press.
- Ogundipe, H.O., K.E. Dashiell, and S.M. Osho. 1989. Soybean yield and quality as affected by soybean varieties and processing techniques. *Tropical Grain Legume Bulletin* 36: 12-14.
- Okechie-Offoha, Marcellina U. 1996. "Introduction." In *Ethnic and Cultural Diversity in Nigeria*, ed. by Marcellina U. Okechie-Offoha and Matthew N.O. Sadiku, pp. 1-8. Trenton, New Jersey: Africa World Press.
- Okpara, Emeka. 1988. The will to survive: A study of the basic needs of Nigerians. *Rural Development in Nigeria* 3(1): 58-68.
- Okuneye, P.A. 1988. Shift in agricultural production and potential effects on health by the year 2000. *Rural Development in Nigeria* 3(2): 116-123.
- Olawoye, Janice E. 1988. Difficulties of rural women in securing resources for agricultural production: Two case studies from Oyo State, Nigeria. *Rural Development in Nigeria* 3(2): 77-81.
- Olayide, S.O. 1983. "Food availability and requirements in Nigeria." In *Nutrition and Food Policy in Nigeria*, ed. by T. Atinmo, and L. Akinyele, pp. 32-47. Ibadan, Nigeria: Ibadan University Press.
- Osirim, Mary J. 1997. "Barriers and opportunities: The role of organizations in Nigerian women's quest for empowerment." In *Subsaharan Africa in the 1990s: Challenges to Democracy and Development*, ed. by Rukhsana A. Siddiqui, pp. 158-176. Westport, Connecticut: Praeger.
- Oyejide, T.A., A. Soyode, and M.O. Kayode. 1985. *Nigeria and the IMF*. Ibadan, Nigeria: Heinemann Educational.
- Oyenuga, V.A. 1968. *Nigeria's Foods and Feeding Stuffs: Their Chemistry and Nutritive Value*. Ibadan, Nigeria: Ibadan University Press.
- Paolisso, Michael and Joanne Leslie. 1995. Meeting the changing health needs of women in developing countries. *Social Science and Medicine* 40(1): 55-65.
- Payne, Philip and Michael Lipton. 1994. *How Third World Rural Households Adapt to Dietary Energy Stress: The Evidence and the Issues*. Washington, D.C.: International Food Policy Research Institute.

- Payne, Rhys. 1986. "Food deficits and political legitimacy: The case of Morocco." In *Africa's Agrarian Crisis: The Roots of Famine*, ed. by Stephen K. Commins, Michael F. Lofchie, and Rhys Payne, pp. 153-172. Boulder, Colorado: Lynne Rienner.
- Pearce, Fred. 1994a. Africa's farmers know best. *New Scientist* 142: 11-12.
- Pearce, Fred. 1994b. Deserting dogma: Two communities in Kenya and Nigeria prevent desertification. *The Geographical Magazine* 66: 39-40.
- Pearce, Fred. 1994c. Arid lands: Prospering on the desert margin. *The Geographical Magazine* 66: 24-29.
- Pearce, Fred. 1996. Crying out for food. *New Scientist* 152: 14-16.
- Pedersen, Duncan and Veronica Baruffati. 1989. Healers, deities, saints and doctors: Elements for the analysis of medical systems. *Social Science and Medicine* 29(4): 487-496.
- Peet, Richard and Michael Watts. 1993. Development theory and environment in an age of market triumphalism. *Economic Geography* 69(3): 227-253.
- Pellett, Peter L. 1983. Changing concepts of world nutrition. *Ecology of Food and Nutrition* 13(2): 115-125.
- Pellett, Peter L. 1991. Commentary: Nutrition, sustainable development and the environment. *Ecology of Food and Nutrition* 26: 187-201.
- Pelto, Gretel H. 1987. Cultural issues in maternal and child health and nutrition. *Social Science and Medicine* 25(6): 553-559.
- Pelto, Gretel H. and Luis Alberto Vargas. 1992. Introduction: Dietary change and nutrition. *Ecology of Food and Nutrition* 27: 159-161.
- Pelto, Pertti J. and Gretel H. Pelto. 1992. Developing applied medical anthropology in Third World countries: Problems and actions. *Social Science and Medicine* 35(11): 1389-1395.
- Peterson, Stephen. 1986. "Neglecting the poor: State policy toward the smallholder in Kenya." In *Africa's Agrarian Crisis: The Roots of Famine*, ed. by Stephen K. Commins, Michael F. Lofchie, and Rhys Payne, pp. 59-83. Boulder, Colorado: Lynne Rienner.
- Pingali, Prabhu, Yves Bigot, and Hans Binswanger. 1987. *Agricultural Mechanization and the Evolution of Farming Systems in Sub-Saharan Africa*. Baltimore: Johns Hopkins University Press.

- Pingali, Prabhu and Hans Binswanger. 1988. "Population density and farming systems: The changing locus of innovations and technical change." In *Population, Food and Rural Development*, ed. by Ronald Lee et al. Oxford: Clarendon Press.
- Porter, Gina. 1994. Food marketing and urban food supply on the Jos Plateau, Nigeria: A comparison of large and small producer strategies under "SAP." *The Journal of Developing Areas* 29: 91-110.
- Porter, Roger B. 1993. "Introduction: National food policies in a global economy." In *The Emerging Global Food System*, ed. by Gaull, Gerald E. and Ray A. Goldberg, pp. 1-12. New York: John Wiley & Sons.
- Robbins, John. 1992. *May All Be Fed: Diet for a New World*. New York: William Morrow.
- Roemer, Milton I. 1993. *National Health Systems of the World: Volume 2*. Oxford: Oxford University Press.
- Rohde, Jon Eliot and Lukas Hendrata. 1982. "Development from below: Transformation of village-based nutrition projects to a National Family Nutrition Program in Indonesia." In *Nutrition Policy Implementation: Issues and Experience*, ed. by Nevin S. Scrimshaw and Mitchel B. Wallerstein, pp. 209-230. New York: Plenum Press.
- Roger, E.M. 1983. *Diffusion of Innovations*. New York: The Free Press.
- Rolfes, S.R. and L.K. DeBruyne. 1990. *Life Span Nutrition: Conception Through Life*. New York: West Publishing Company.
- Rostow, W.W. 1960. *The Stages of Economic Growth*. Cambridge: Cambridge University Press.
- Rozin, Paul. 1980. "The study of human food selection and the problems of Stage 1 Science." In *Nutrition and Behavior*, ed. by Sanford A. Miller, pp. 9-18. Philadelphia: The Franklin Institute Press.
- Ruttan, Vernon W. 1988. Cultural endowments and economic development: What can we learn from anthropology? *Economic Development and Cultural Change* 36(3): 247-271.
- Ruttan, Vernon W. 1991. What happened to political development? *Economic Development and Cultural Change* 39(2): 265-292.
- Sachs, Jeffrey. 1996. Growth in Africa: It can be done. *The Economist* June 29: 19-21.

- Sadiku, Matthew N.O. 1996. "The Yoruba." In *Ethnic and Cultural Diversity in Nigeria*, ed. by Marcellina U. Okechie-Offoha and Matthew N.O. Sadiku, pp. 125-148. Trenton, New Jersey: Africa World Press.
- Sahn, David E., Paul Dorosh, and Stephen Younger. 1996. Exchange rate, fiscal and agricultural policies in Africa: Does adjustment hurt the poor? *World Development* 24(4): 719-747.
- Sai, Fred T. 1986. "Population and health: Africa's most basic resource and development problem." In *Strategies for African Development*, ed. by Robert J. Berg and Jennifer Seymour Whitaker, pp. 129-154. Berkeley, California: University of California Press.
- Sallnow, John. 1990. Is it aid or neocolonialism? *Geographical Magazine* 112(6): 30-35.
- Salunkhe, D.K. and S.S. Kadam. 1989. *Handbook of World Food Legumes: Nutritional Chemistry, Processing Technology, and Utilization (Volume 1)*. Boca Raton, Florida: CRC Press.
- Sandiford, P., J. Cassel, M. Montenegro, and G. Sanchez. 1995. The impact of women's literacy on child health and its interaction with access to health services. *Population Studies* 49: 5-17.
- Sasson, Albert. 1990. *Feeding Tomorrow's World*. Paris: United Nations.
- Saxenian, Helen. 1995. Optimizing health care in developing countries. *Issues in Science and Technology* Winter 1994-1995: 42-48.
- Scarpaci, Joseph L. 1993. On the validity of language: Speaking, knowing, and understanding in medical geography. *Social Science and Medicine* 37(6): 719-724.
- Scarpaci, Joseph L. and Ignacio Irarrazaval. 1996. "Caring for people: health care and education provision." In *Latin American Development*, ed. by David Preston. Harlow: Longman.
- Schank, Roger and Robert Abelson. 1977. *Scripts, Plans, Goals and Understanding: An Inquiry into Human Knowledge Structures*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Schatz, Sayre P. 1994. Structural adjustment in Africa: a failing grade so far. *The Journal of Modern African Studies* 32(4): 679-692.

- Scheper-Hughes, Nancy. 1987. "Culture, scarcity, and maternal thinking: Mother love and child death in Northeast Brazil." In *Child Survival: Anthropological Perspectives on the Treatment and Maltreatment of Children*, ed. by Nancy Scheper-Hughes. Boston: D. Reidel Publishing Company.
- Scheper-Hughes, Nancy. 1990. Three propositions for a critically applied medical anthropology. *Social Science and Medicine* 30(2): 189-197.
- Schoepf, Brooke and Walu Engundu. 1991. "Women and structural adjustment in Zaire." In *Structural Adjustment and African Women Farmers*, ed. by Christina H. Gladwin, pp. 151-168. Gainesville, Florida: University of Florida Press.
- Schumacher, Ernst F. 1973. *Small is Beautiful: A Study of Economics as if People Mattered*. London: Blond and Briggs.
- Sen, Amartya. 1983. Development: Which way now? *The Economic Journal* 93(372): 745-762.
- Sen, Amartya. 1984. *Resources, Values, and Development*. Cambridge, Massachusetts: Harvard University Press.
- Sen, Amartya. 1989. Food and freedom. *World Development* 17(6): 769-781.
- Sethi, Sandeepa, Usah Mehta, and Indu Grover. 1992. Perception of nutritional nutritional constraints and correlates by rural Haryana women. *Ecology of Food and Nutrition* 28: 219-226.
- Shields, David L.L. 1995. *The Color of Hunger*. London: Rowman and Littlefield.
- Simon, J. 1981. *The Ultimate Resource*. Princeton, New Jersey: Princeton University Press.
- Simpson, E.S. 1994. *The Developing World: An Introduction*. Harlow: Longman.
- Smil, Vaclav. 1991. Population growth and nitrogen: An exploration of a critical existential link. *Population and Development Review* 17(4): 569-601.
- Smil, Vaclav. 1994. How many people can the earth feed? *Population and Development Review* 20(2): 255-292.
- Smith, Joyotee, Anthony D. Barau, Abraham Goldman, and James H. Mareck. 1994. The role of technology in agricultural intensification: The evolution of maize production in the Northern Guinea Savanna of Nigeria. *Economic Development and Cultural Change* 42(3): 537-554.

- Soyabeans in the Nigerian Diet. 1985. Extension Bulletin No. 20, Home Economics Series. Zaria, Nigeria: Gaskiya Corporation Ltd.
- Spradley, James P. 1979. *The Ethnographic Interview*. New York: Holt, Rinehart, and Winston.
- Spradley, James P. 1980. *Participant Observation*. New York: Holt, Rinehart and Winston.
- Spring, Anita and Vicki Wilde. 1991. "Women farmers, structural adjustment, and FAO's Plan of Action for Integration of Women in Development." In *Structural Adjustment and African Women Farmers*, ed. by Christina H. Gladwin, pp.387-408. Gainesville, Florida: University of Florida Press.
- Stanton, Bonita. 1994. Child health: Equity in the non-industrialized countries. *Social Science and Medicine* 38(10): 1375-1383.
- Stebbins, Kenyon R. 1993. "Constraints on successful public health programs: A view from a Mexican community." In *Health and Health Care in Developing Countries*, ed. by Peter Conrad and Eugene B. Gallagher, pp. 211-227. Philadelphia: Temple University Press.
- Stefil, L.D. 1989. *Transforming Nigerian Agriculture: The Role of Research*. Lagos: Nigerian Institute of International Affairs.
- Stock, Robert. 1983. Distance and the utilization of health facilities in rural Nigeria. *Social Science and Medicine* 17(9): 563-570.
- Strauss, Anselm and Juliet Corbin. 1990. *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Newbury Park, California: Sage.
- Stone, Glenn D., Robert McC. Netting, and M. Priscilla Stone. 1990. Seasonality, labor scheduling, and agricultural intensification in the West African Savanna. *American Anthropologist* 92(1): 7-23.
- Sudarkasa, Niara. 1973. *Where Women Work: A Study of Yoruba Women in the Marketplace and in the Home*. Ann Arbor, Michigan: Museum of Anthropology, University of Michigan.
- Sudarkasa, Niara. 1986. "In a world of women: Field work in a Yoruba community." In *Women in the Field: Anthropological Experiences*, ed. by Peggy Golde, pp. 167-191. Berkeley, California: University of California Press.
- Svedberg, Peter. 1990. Undernutrition in sub-Saharan Africa: Is there a gender bias? *The Journal of Development Studies* 26(3): 471-486.

- Tax, Sol. 1953. *Penny Capitalism: A Guatemalan Indian Economy*. Washington, D.C.: Smithsonian Institute, Institute of Social Anthropology.
- Taylor, D.R.F. 1992. "Development from within and survival in rural Africa: A synthesis of theory and practice." In *Development from Within: Survival in Africa*, ed. by D.R.F. Taylor and Fiona Mackenzie, pp. 214-258. London: Routledge.
- Thomas, John W. and Merilee S. Grindle. 1990. After the decision: Implementing policy reforms in developing countries. *World Development* 18(8): 1163-1181.
- Thomas, Paul R. and Robert Earl. 1994. *Opportunities in the Nutrition and Food Sciences*. Washington, D.C.: National Academy Press.
- Thomas, Tony. 1996. Sub-Saharan Africa: So little done, so much to do. *The Economist* 340(7982): 3-18.
- Thorbecke, Erik. 1995. "Causes of African development stagnation; Policy diagnosis and policy recommendations for a long-term development strategy." In *Whither African Economies?* ed. by Jean-Claude Berthelemy, pp. 117-148. Paris: Organization for Economic Cooperation and Development.
- Thorbecke, Erik and Solomane Kone. 1995. "The impact of stabilisation and structural adjustment programmes (SSAPs) on performance in sub-Saharan Africa." In *Whither African Economies?* ed. by Jean-Claude Berthelemy, pp. 17-56. Paris: Organization for Economic Cooperation and Development.
- Tobias, Alice L. and Patricia J. Thompson. 1980. "Breast-feeding in ecological perspective." In *Issues in Nutrition for the 1980s*, ed. by Alice L. Tobias and Patricia J. Thompson, pp. 92-94. Belmont, California: Wadsworth.
- Tomich, Thomas P., Peter Kilby, and Bruce F. Johnston. 1995. *Transforming Agrarian Economies*. Ithaca, New York: Cornell University Press.
- Torun, Benjamin and Francisco Chew. 1994. *Protein-energy malnutrition*. In *Modern Nutrition in Health and Disease*. Philadelphia: Lea and Febiger.
- Trager, Lillian and Clara Osinulu. 1991. "New women's organizations in Nigeria: One response to structural adjustment." In *Structural Adjustment and African Women Farmers*, ed. by Christina H. Gladwin, pp. 339-358. Gainesville, Florida: University of Florida Press.
- Trant, Gerald I. 1993. The global food system's contribution to the management of world hunger. In *The Emerging Global Food System*, ed. by Gerald E. Gaul and Ray A. Goldberg, pp. 109-116. New York: John Wiley & Sons.

- Turner, B.L. II and Stephen B. Brush. 1987. *Comparative Farming Systems*. New York: Guilford Press.
- Umeh, Joseph C., Robert A. Freeman, Dowey D. Garner, and David E. Blevins. 1986. Attitudes of Nigerian physicians toward a national health service. *Social Science and Medicine* 23(7): 701-708.
- UNDP. 1990. *Human Development Report*. New York: Oxford University Press.
- UNICEF. 1988. *State of the World's Children*. Oxford: Oxford University Press.
- UNICEF. 1993. *State of the World's Children*. Oxford: Oxford University Press.
- Uri, N.D., G.V. Chomo, R. Hoskin, and B. Hyberg. 1993. The integration of the market for soybeans and soybean products. *Food Policy* 18(3): 200-213.
- Uvin, P. 1993. "The state of world hunger." In *The Hunger Report*, ed. by P. Uvin. Providence, Rhode Island: Alan Shawn Feinstein World Hunger Program.
- Uyanga, Joseph. 1979. The characteristics of patients of spiritual healing homes and traditional doctors in southeastern Nigeria. *Social Science and Medicine* 13A: 323-329.
- van der Hoeven, Rolph. 1991. Adjustment with a human face: Still relevant or overtaken by events? *World Development* 19(12): 1835-1845.
- Viteri, Fernando E. 1982. "Nutrition and work performance." In *Nutrition Policy Implementation*, ed. by Nevin S. Scrimshaw and Mitchel B. Wallerstein, pp. 3-20. New York: Plenum Press.
- Vogel, Ronald J. and Betsy Stephens. 1989. Availability of pharmaceuticals in sub-Saharan Africa: Roles of the public, private, and church mission sectors. *Social Science and Medicine* 29(4): 479-486.
- Vorhies, F. and F. Glahe. 1988. Political liberty and social development: An empirical investigation. *Public Choice* 58: 45-71.
- Wardlaw, G.M. and P.M. Insel. 1990. *Perspectives in Nutrition*. St. Louis: Times Mirror/Mosby College Publishing.
- Watts, Michael. 1987. "Introduction." In *State, Oil, and Agriculture in Nigeria*, ed. by Michael Watts, pp. 1-33. Berkeley, California: Institute of International Studies, University of California.

- Watts, Michael. 1994. Development II: The privatization of everything? *Progress in Human Geography* 18(3): 371-384.
- Watts, Michael J. and H.J. Bohle. 1993. The space of vulnerability: The causal structure of hunger and famine. *Progress in Human Geography* 17(1): 43-67.
- Weingartner, K.E., K.E. Dashiell, and A.I. Nelson. 1987. Soybean utilization in Africa: Making a place for a new food. *Food and Nutrition* 13(2): 21-28.
- Whitney, Eleanor N. and Sharon R. Rolfes. 1996. *Understanding Nutrition*. Minneapolis, Minnesota: West Publishing Company.
- Williams, Carol E. 1984. The status and tasks of rural women in Nigeria: A case study of Alagbaa village, Oyo State, Nigeria. *Rural Development in Nigeria* 1(2): 145-153.
- Winikoff, Beverly. 1980. "Changing public diet." In *Issues in Nutrition for the 1980s*, ed. by Alice L. Tobias and Patricia J. Thompson, pp. 103-121. Monterey, California: Wadsworth.
- Winikoff, Beverly and Virginia H. Laukaran. 1989. Breast feeding and bottle feeding controversies in the developing world: Evidence from a study in four countries. *Social Science and Medicine* 29(7): 859-868.
- World Bank. 1984. *Toward Sustained Development in Sub-Saharan Africa*. Washington, D.C.: The World Bank.
- World Bank. 1992. *Investing in Nutrition with World Bank Assistance*. Washington, D.C.: The World Bank.
- World Bank. 1993. *World Development Report 1993: Investing in Health*. New York: Oxford University Press.
- World Bank. 1994a. *A New Agenda for Women's Health and Nutrition*. Washington, D.C.: The World Bank.
- World Bank. 1994b. *Better Health in Africa*. Washington, D.C.: The World Bank.
- World Bank. 1995. *African Development Indicators*. Washington, D.C.: The World Bank.
- World Health Organization. 1993. *Implementation of the global strategy for health for all by the year 2000*. Geneva: World Health Organization.
- Young, Liz. 1996. World hunger: A framework for analysis. *Geography* 81(2): 97-110.

BIOGRAPHICAL SKETCH

Amanda Espy Brown was born in Jackson, Alabama, in 1966. She is the third child of three of Ike and Carol Espy. Amanda grew up in Tuscaloosa, Alabama, where she attended Central High School. Following graduation in 1984, Amanda studied geology, with minors in math and geography, at Auburn University in Alabama. She graduated in 1988 and immediately went on to the University of Alabama to earn a master's degree in geography in August of 1990. While attending the University of Alabama, she worked as a research assistant in the Geographic Information Systems laboratory in the Department of Geography, worked as a staff geologist in the University's summer paleontology program, and interned at National Geographic Society in Washington, D.C.

Following graduation, Amanda married Warren Brown and moved to Murfreesboro, Tennessee, where she taught both geography and geology at Middle Tennessee State University until 1994. During the summer of 1993 she volunteered at Kersey Children's Home in Ogbomoso, Nigeria, and became interested in the area of nutrition and health in the developing world. After moving to Navarre, Florida, with her husband in August 1994, Amanda began working on her Ph.D. in geography at the University of Florida in Gainesville. During her time at Gainesville, she worked as a teaching assistant in the Department of Geography and conducted fieldwork in southwest Nigeria where she studied the nutritional problems of the Yoruba people. After

graduation, Amanda plans to seek a teaching position and continue her research in the area of health and nutrition, both in the United States and in Africa.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



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This dissertation was submitted to the Graduate Faculty of the Department of Geography in the College of Liberal Arts and Sciences and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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